The Chemical Age

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Contents

	PAGE
EDITORIAL NOTES: The Chemical Trade Returns; The Anglo-German Trade Discussion; Superphosphate Difficulties; Synthetic Rubber Doubts; Important Dyestuff Lectures; The Chemical Foundation Suit Ends	365
Some Notes on Sand Used in Glass. By W. Singleton	368
The Society of Public Analysts	369
Chemical Trade Returns for September	370
Reviews	371
Indian Chemical Notes; Correspondence: The Case of Madden *v.* Holland	372
From Week to Week	374
References to Current Literature	375
Patent Literature	376
Weekly Chemical Prices and Market Reports	379
Company News: Chemical Trade Inquiries, etc.	384
Commercial Intelligence; New Companies	386
The China Clay Trade Review	I–16

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Chemical Trade Returns

THE figures given in the Board of Trade returns in regard to the chemical industry do not make cheerful reading, but the continuance of the coal strike has rendered this more or less inevitable. As regards the month ending September 30, 1926, imports of chemicals, dyes, drugs, and colours have increased by £274,294 as compared with the corresponding period last year; exports have decreased by £166,254; while re-exports have decreased by £8,558. As regards the totals for the nine months ended September 30, 1926, imports have increased by £625,063; exports have decreased by £1,129,032; and re-exports have decreased by £158,245.

During the month exports of coal tar products amounted to £69,680 as compared with £88,434 in the previous year, while imports increased from £59,209 to £177,632. Exports of ammonium sulphate fell from £248,573 to £109,385; the amount taken by Spain and the Canaries alone decreased in value by over £100,000. Sulphuric acid exported showed a slight increase in value (£2,694 as against £1,447). Dyes and dyestuffs exported declined in value from £78,305 to £46,850. Alizarine imports increased from £1,425 to £2,935. Fortunately, painters' colours stood their ground nobly, the value of exports being £302,505 as against £315,445. Increases were shown by exports of glycerine (£85,538 against £47,604) and sodium compounds (£304,209 against £296,479). In this connection it is of interest to observe that imports of sodium nitrate fell from £85,235 to £10,586. A painful hint of the effect of the strike on our foreign trade is afforded by the recently published figures of imports of dyestuffs into America during August. Great Britain's share amounted to 0·5 per cent. of the whole, as against 7·5 per cent. in June.

On the whole, it seems fair to take the view that it might have been much worse. This may seem rather cold comfort; yet it should be remembered that the figures are not overwhelmingly bad. Considering that for nearly six months the coal industry has been engaged in a life-and-death struggle, there is a sane satisfaction to be derived from the fact that the chemical industry as a whole is still in a healthy condition. If and when the industrial position permits of unhindered working, there should be a great boom in trade.

The Anglo-German Trade Discussion

A VERY close veil of secrecy has enveloped the discussions which took place between leading British and German industrialists at the house of Colonel Wilfrid Ashley, Minister of Transport, a few days ago. Among those who attended were a number of gentlemen interested in the chemical and allied industries. These included Sir Max Muspratt, president of the Federation of British Industries and chairman of the United Alkali Co., Ltd.; Dr. Duisberg, chairman of the Federation of German Industry and a member of the directorate of the I.G.; Herr von Weinberg, a director of the I.G.; and Dr. Ernest von Simson, a director of the I.G., who acts as adviser on commercial and political treaties. All the delegates emphasised the unofficial nature of the conference, and the fact that they were present in their private capacities; Sir Max Muspratt, for example, stated that neither the British Government, nor the Federation of British Industries, nor the Federation of German Industry had any connection with it. According to an official statement issued after the conference: "The main object of the conference being to examine the prospects of mutual assistance in re-establishing prosperous industry in Europe and in augmenting the opportunities of profitable employment, this branch of inquiry engaged the closest attention of the gathering. Emphasis was laid upon the disparity between the productive capacity of industrial nations following upon the war and the reduced purchasing powers of most of the communities of the world." This meeting was merely of the nature of a preliminary survey, and it was decided to form a standing joint committee of both countries to pursue the matter further.

It is premature to prophesy the course of events. There have been hints that in regard to some industries, such as that of dyestuffs, there was general agreement at the conference that capacity for output was getting too far ahead of capacity for consumption. While there is no definite confirmation of this, it should be remembered that certain German industrialists are definitely wedded to this view. The steel combine recently formed between Germany, France, Belgium, and Luxembourg was based on a definite output which will not, in the ordinary course of events, be exceeded. In any case, it is fairly certain that events are moving in the direction of the cessation of unlimited destructive competition. It seems likely that in the future, not only in Europe, but elsewhere, there will be much more scientific observation of both production and markets. This need not necessarily lead to underproduction. In the case of synthetic nitrogenous fertilisers, for example, the I.G. in Germany, and Synthetic Ammonia and Nitrates, Ltd., in this country are carefully investigating every possibility of finding for their products the widest possible use. A policy of this kind, in which all available channels for the disposal of commodities are fully exploited, while blind over-production, with its attendant alternate booms and slumps, is avoided, is likely to be in most industries the course to be followed in the future.

Superphosphate Difficulties

SOME interesting details in connection with the present position of the superphosphate industry were disclosed by the Chairman and other speakers at the annual meeting of the well-known Anglo-Continental Guano Works, Ltd., which was held during the week. The superphosphate industry has in recent years passed through a series of difficult trade conditions, the consumption of this particular fertiliser having fallen off as compared with pre-war figures, while large quantities of foreign material, which can be marketed at low prices owing to the depreciated franc, have found their way into this country. It was suggested at the meeting that the decline in the consumption of superphosphates in this country might to some extent be attributed to the smaller purchasing power of the consumer, but in all probability there is a good deal of truth in the statement that a certain amount of harm has resulted from an impression which has gained ground that superphosphate tends to increase the acidity of the soil. In this respect it would seem that the fears expressed are largely imaginary, but it obviously behoves those interested in the industry to give the matter their closest attention from the scientific point of view and to set in motion propaganda such as that which has proved so beneficial with other forms of artificial fertilisers. Two considerations which at the present time are proving highly embarrassing to the industry are, first, the high cost of sulphuric acid, and, secondly, the exceptional rates now ruling for freightage. Owing to the coal stoppage in this country there are but few steamers operating in the Mediterranean which are willing to bring the raw material to this country, for the reason that there are now no return cargoes of coal to Southern Europe. Freights have, in fact, risen 100 per cent. as compared with those ruling six months ago. This latter drawback is, of course, only of a temporary nature, but so far as the price of acid is concerned it seems that the superphosphate manufacturer's patience is likely to be as sorely tried as is that of all other large acid consumers.

Synthetic Rubber Doubts

ALTHOUGH the price of raw rubber has by no means been maintained at the boom levels which have been touched during the past year, it is still at a comparatively high figure as compared with the exceptionally low level to which it fell prior to the Stevenson restriction scheme making itself felt. It is not, therefore, surprising that chemists should continue to be attracted by the opportunities which await the introduction of a really cheap and serviceable artificial substitute, and, although the present generation may not benefit, it can scarcely be thought that the organic chemist will fail to turn his knowledge of synthesis to account in this one direction when success has been achieved in so many others. Synthetic rubber has lately, in fact, been occupying renewed attention in chemical circles, and it is a little mystifying to find that the recognised authorities on the subject are decidedly contradictory in their opinions as to its likelihood of ever becoming an important factor in the commercial world. The optimistic school is, perhaps, well represented by Dr. S. P. Schotz, who in his recently published volume goes so far as to say that synthetic rubber will "inevitably become one of the most important branches of industrial organic chemistry," and that in the future the world (by utilising timber, coal, oil, etc., together with tidal water power) will become independent of the tropical countries for the production of this necessity of modern life.

This, no doubt, will be regarded as a somewhat sweeping statement; but, on the other hand, it must be remembered that the attempts which have been made to synthesise rubber are of comparatively recent date, and synchronise more or less with the development of the cheap motor car. When, too, consideration is given to the years taken in perfecting other complicated processes which are now in everyday use, it cannot be said that the progress so far recorded with artificial rubber is disappointing in view of the fact that here is an example which must be considered as something much more complex and much greater than any other modern achievement in the field of organic chemistry. And yet, once work was started in earnest, results followed one on the other with astonishing rapidity and encouraging success; and, as one authority has said, here we have a body unsurpassed in complicated structure, and yet it can be prepared from the simplest compounds.

In America recently the Rubber Division of the American Chemical Society has been endeavouring to get down to the real facts surrounding the artificial rubber problem, but the opinions expressed by those who have studied the processes at present available are not exactly encouraging reading. It is well known, of course, that during the war Germany produced a fairly considerable quantity of methyl rubber by the polymerisation of dimethylbutadiene, but there seems little doubt that this product lacks plasticity and demands

the introduction of a heavy proportion of fillers. Dr. W. C. Geer, of the well-known Goodrich undertaking, ascribed the failure of synthetic rubber to the poor physical properties of the product, to the lack of knowledge regarding the elasticity of rubber as related to structural formulæ, and to the high cost, low yield, and multiplicity of steps in the process. Although these views seem more or less to summarise opinion in America as to the opportunities presented for developing an artificial rubber industry, it must be remembered that in the past the chemist has succeeded in resolving problems which must have appeared equally obstinate in their earlier stages, and it would be a great pity if further work on the subject were to be curtailed or abandoned merely because the commercial outlook appears unpromising. At least, however, those who are following the process up should find an incentive in the suggestion that although the synthesis of rubber on a commercial scale may be unlikely, there is always the possibility that the chemist may produce something much better.

Important Dyestuff Lectures

THE West Riding Section of the Society of Dyers and Colourists is to be congratulated on the excellent series of addresses and papers on dyestuffs arranged for the coming winter months. The opening address on October 21, on "The International Outlook of Dyestuffs," will be by Mr. W. J. U. Woolcock, ex-president of the Society of Chemical Industry and general manager of the Association of British Chemical Manufacturers, and this will be followed on November 18 by Professor E. C. C. Baly on "New Synthetic Glass"; on December 2 by Mr. G. Holland Ellis with a lecture and exhibition; on December 16 by Mr. W. Leach on "Organisation and the Dyeing Industry"; on January 6 by Dr. F. M. Rowe on "Soledon Colours (SDC) and their Development on Cotton and Wool"; on February 10 by Professor Dr. Paul Krais on "The Work of the German Commission on Standardisation of Colour Fastness"; and on March 3 by Dr. E. B. Higgins (British Synthetics, Ltd.), on "Azoic Colours." Of particular interest will be the paper by Dr. Krais, who is the chairman of the German Commission, and who was formerly in Bradford for a number of years, holding a responsible post with a large firm of dyers. Professor Baly's paper on synthetic glass promises new matter that is sure to attract attention, and Dr. F. M. Rowe's review of his work on the range of Soledon dyestuffs should be good; in fact, all promise to be very well worth hearing.

The Chemical Foundation Suit Ends

AT long last the litigation between the United States Government and the United States Chemical Foundation has come to an end, the Supreme Court having finally refused to invalidate the sale to the Chemical Foundation of the German dyestuff and other chemical patents seized during the war. As will be remembered, these patents, about 4,800 in all, were originally handed over to the Alien Properties Custodian. In a perfectly straightforward and legal manner they were sold by the latter to the Chemical Foundation for the sum of 250,000 dollars. After the war, the United States Government suddenly decided that the price paid was totally inadequate, and that the method of disposal was irregular; charges of conspiracy were raised against the representatives of the dyestuff and chemical industry and the Government agent concerned in the sale; and an action was begun to have the sale annulled in the courts. For unknown reasons, the Government attached very great importance to the case, and in spite of rebuffs in two lower courts, insisted on carrying it to the Supreme Court. In the circumstances it has all the more reason for regarding the decision of the latter as a very severe rap over the knuckles. Its unpleasant experiences are not likely to end there: this protracted litigation must have involved great expenditure, and American chemists are likely to be very free in their criticism of those who were sufficiently ill-advised to incur it.

Had the case taken any other course a very dangerous precedent would have been created, for the United States Government would have been in a position to threaten, on very slight grounds, the repudiation of any agreement entered into by its accredited representatives. The Chemical Foundation is to be congratulated on having fought the case to a successful conclusion.

Books Received

DECENNIAL INDEX of *The Analyst*. Vols. XLI–L. Compiled by M. B. Elliott. Cambridge: W. Heffer and Sons, Ltd. Pp. 353. 21s.

REPORT ON THE ECONOMIC AND FINANCIAL SITUATION OF EGYPT. By E. Homan Mulock. London: H.M. Stationery Office. Pp. 54. 1s. 6d.

The Calendar

Oct.		
19	Hull Chemical and Engineering Society: Presidential Address: "Refrigeration." G. H. M. Hutchinson. 7.45 p.m.	Grey Street, Park Street, Hull.
19	Society of Chemical Industry (South Wales Section): "The Measurement of Temperature in Industrial Processes." Somerville Vernon. 7.30 p.m.	Technical College, Cardiff.
19	Royal Photographic Society: "The Use of Light-Sensitive Cells in Photometry, Wireless Picture Telegraphy and Television." T. Thorne Baker. 7 p.m.	35, Russell Square, London, W.C.1.
20	Society of Glass Technology. General Discussion on "Annealing of Glass." 2.30 p.m.	The University, Leeds.
20	Society of Chemical Industry (Nottingham Section): "The Manufacture of Organic Medicinal Chemicals." F. H. Carr. 7.30 p.m.	University College, Nottingham.
20	Institute of Chemistry (London Section): Discussion on "The Report of the Special Committee of the Council upon Registration." 8 p.m.	30, Russell Square, London, W.C.
21	Society of Dyers and Colourists (West Riding Section): "The International Outlook of Dyestuffs." W. J. U. Woolcock.	
21	Chemical Society: 8 p.m.	Burlington House, Piccadilly, London.
22	Institute of Metals (Sheffield Section): A conjoint meeting with other societies interested, for the Sorby Lecture by Professor H. C. H. Carpenter. 7.30 p.m.	The University, St. George's Square, Sheffield.
22	Oil and Colour Chemists' Association: "The Rôle of the Chemist in the Investigation of Problems of Industrial Hygiene." C. A. Klein. 8 p.m.	8, St. Martin's Place, Trafalgar Square, London.

Some Notes on Sands Used in Glass Making

By W. Singleton

In view of the importance which attaches to the successful development of the British glass industry, the following article, by Mr. W. Singleton, of the Research Laboratories of the General Electric Co., Ltd., is of special interest.

ALL sands consist chiefly of silica, in the form of broken grains of crystalline quartz, accompanied by various forms and proportions of impurities, generally resulting from the disintegration of silicious rocks. These impurities may be present as coatings or impregnations of the quartz grains, or partly in the form of grains or dust of other materials. In sands derived from granite rocks and crystalline schists, the quartz is frequently accompanied by grains of felspathic materials and scales of mica. Sand, when used as a source of silica for glass-making, should be as pure as possible, and free from these impurities, which would be likely to affect the value of the finished glass. Small quantities of iron impart a greenish colour to the glass, which detracts from the lustre of the glass when used for decorative purposes, and damage the power of transmitting light possessed by lenses and prisms of optical glass.

In other industries, the impurities in the sand may be of little concern, and the hardness and shape of the grains more essential than the chemical composition. For instance, for abrasive purposes the use of sand depends on the toughness and hardness, and to some extent on the "sharpness" of its grains. Although sand has many uses, the most important are those connected with the manufacture of refractories and glass-making, and it is from the standpoint of the use of sand in glass-making that these notes are written.

Comparatively little has been written on the subject of glass manufacture, and still less on the subject of sands used in glass-making. Before the War large quantities of foreign sands, notably from the Continent, were used in the manufacture of glass in this country, and this fact no doubt accounts for the scarcity of literature upon the resources of sand in Great Britain, and the extent of their application to glass-making. The use of imported sand was chiefly due to the fact that the imported sands were generally considered purer, and the actual cost was less. The restriction of supplies of foreign sands during the War, due to numerous causes, opened up the question as to whether suitable sands for glass-making occur in this country.

Investigation of British Sands

The results of a series of investigations, commenced before the War, into the British resources of sands suitable for glass-making, which were carried on by Dr. Boswell with the support of the Imperial College of Science and Technology, and later, with the support of the Ministry of Munitions, were published in an original memoir in 1916, which was supplemented by information acquired later and published in 1918. The survey is exhaustive, and may be considered to cover all the important sources of supply in Britain. The location and characteristics of British glass-sands are the subject of a paper by Dr. Boswell communicated to the *Journal of the Society of Glass Technology* (Vol. 1, 3, 1917). A considerable amount of valuable work was carried out about the same time by C. J. Peddle, on the substitution of some British sands for foreign sands in the manufacture of high-grade glass. An account of this work is given in the *Journal of the Society of Glass Technology* (Vol. 1, p. 27), and showed that good colourless glass can be made from some English sands, providing they have been thoroughly washed.

Glass may contain, usually, between 50 and 70 per cent. of silica, which was originally added to the "batch," or mixture of raw materials, in the form of sand. From the point of view of quantity, sand is the most important constituent of the batch, and its properties have some influence on the character of the final glass obtained. As an example of the influence that the properties of sand exert upon the final qualities of a glass, Hovestadt ("Jena Glass," Everett's translation, p. 21) states that thermometer-glass made in the Thuringian Forest district owes its special quality to certain sand found only in the neighbourhood of the village of Martinroda. The glass is reported to withstand repeated melting, blowing and fusing without change, and without becoming rough and of dull surface like ordinary glass when subjected to similar treatment in the flame. This particular property of the Thuringian Forest glass is attributed to the 3·7 per cent. of alumina which the sand contains.

The chemical composition of sand varies greatly with the nature of the rock which gives rise to the deposit. The sand from rocks very rich in silica is often very fine, and may contain up to 99·9 per cent. silica. It is more frequent for sand to contain fragments of felspathic materials, which give rise to the presence of alumina, ferric oxide and alkalis. For the best grades of glass, such as optical glass, a very pure sand is required, which should preferably have an iron content of less than 0·05 per cent., and not more than a similar amount of other impurities such as alumina, calcium oxide, and alkalis. A good sand is found at Lippe, in Germany, whose silica content is 99·98 per cent.; but the best-known sand is that obtained from Fontainebleau, near Paris. The glass-making sands of Belgium usually contain from 0·2 to 0·5 per cent. of iron. A large number of sand deposits of still less purity are available in many districts; in fact, many such deposits, containing nearly 2 per cent. of iron and other impurities, are used in the manufacture of the cheaper class of bottles. Silica also occurs in Nature in the less compact sedimentary rocks, such as sandstone. But this form of silica suffers the disadvantage of having to be crushed before it can be used for glass-making, yielding a product of considerably varying grain size, of which a proportion is in the form of fine dust; and from the glass maker's point of view, very fine particles are a disadvantage. The same objections apply to quartz or flint as sources of silica for glass-making. The name "flint glass" originates from past times, when ground flint was used as a source of silica in the manufacture of glass; but although ground flint is very seldom used in glass-making at the present time, the name "flint glass" still survives.

Desirable Composition of Sand

It is generally accepted by most glass manufacturers that sand for glass-making should have a high silica content, at least 98 per cent., and for very special glasses the silica content should be 99·5 per cent. or over, and preferably in the form of quartz grains. Most natural sands are accompanied by impurities of alumina and ferric oxide, and some forms may include titanium, magnesium, calcium and probably zirconium compounds. The iron content of a glass-sand should always be low, and for the best work, preferably less than 0·05 per cent. For ordinary work where a larger amount of iron may be permitted, the greenish colour due to the presence of iron in the glass may usually be corrected by the addition of a decolouriser. As little as one-tenth per cent. of iron in a sand may result in the colour of the glass having a greenish tinge. The presence of alumina in a glass-sand may sometimes be desirable, although much may depend on the type of glass which it is desired to produce. Lime and magnesium should preferably be present only in traces.

It may be mentioned that chemical analysis and high purity of a glass-sand have occasionally been over-estimated. The mechanical analysis or physical properties of the sand are equally important. As regards grain size, it is agreed by most authorities, and is put forward by Boswell (*J. Soc. Glass. Tech.*, Vol. i, p. 5) and Peddle (*J. Soc. Glass Tech.*, Vol. i, p. 31), that the grains should as far as possible be of one size, and between 0·25 and 0·5 mm. diameter. Grains of less than 0·1 mm. diameter are a distinct disadvantage, owing to the difficulties they introduce into the founding or melting of the batch, as considerable loss due to "blowing out" may result, or air bubbles, entangled in the fine material, may be introduced into the "metal," which are only removed with difficulty. The shape of the grains is usually considered important owing to the effect upon the time of fusion, angular or sub-angular grains being preferred to rounded grains, owing to the greater surface area, which contributes to rapid melting.

Since the War, and arising out of the work to which references have previously been made, British sands have come to be more used in glass-making than formerly. But probably

the sand most used in making first quality glass is that obtained from Fontainebleau. It is one of the purest sands known, and as a glass-sand, it may be considered almost ideal. This sand is white in appearance, and to the naked eye is a fine and even deposit. It is composed almost entirely of pure clear quartz, and has a silica content of 99·6 per cent. or over. The percentage of ferric oxide and alumina is very low, and other impurities are practically absent. The average of numerous analyses of Fontainebleau sand, made by the author during a number of years, is as follows (percentage) :— silica, SiO_2, 99·71 ; alumina, Al_2O_3, 0·17 ; ferric oxide, Fe_2O_3, 0·02 ; calcium oxide, CaO, trace ; magnesium oxide, MgO, trace ; loss on ignition, 0·16.

Some of the chief features of Fontainebleau sand are its evenness of grain, 97 to 98 per cent. of the grains being between 0·1 and 0·5 mm. diameter, according to figures given by Boswell, and the similarity of the shape of the grains, which are consistently sub-angular. These desirable characteristics, together with its chemical purity, make it ideal for glass-making.

Chemical Analysis

For some classes of work, it may not be necessary to carry out a complete analysis of the glass-sand, involving fusion with sodium or potassium carbonate, and only knowledge of the iron content may be required. In such cases, the sand is digested with hydrofluoric and sulphuric acid in a platinum vessel, in order to remove the silica ; the iron is then best determined in the solution by a colorimetric method. Silica is estimated in the usual way, by fusion of the sand with alkaline carbonate, and separation of the silica by two evaporations with hydrochloric acid with intervening filtrations. The purity of the finally weighed silica is always established by evaporation with hydrofluoric acid, and a drop of sulphuric acid, the silica content being calculated from the loss in weight. Titanium may be estimated colorimetrically.

Mineral analysis is useful as giving an indication of the relative amount of heavy detrital minerals and the quantity of such lighter minerals as quartz and felspar present in the sand. Certain minerals are objectionable in glass-making, and the presence or absence of such minerals may speedily be determined by mineral analysis. Crystals of zircon ($ZrSiO_4$), on account of their highly refractory nature, are very undesirable if present in quantity, as they frequently remain undigested as "stones" in the glass. Titanium minerals are likewise a disadvantage in the making of good glass.

Tentative specifications have been proposed for sand for glass-making by the American Ceramic Society (*Bull. Amer. Cer. Soc.*, 1923, 2, 182). For the purpose of the specification, glass was divided into nine qualities, ranging from first quality optical glass to the commonest green bottle glass. The following limits were proposed :—

	SiO_2	Al_2O_3	Fe_2O_3	CaO and MgO
	Per Cent.			
	Min.	Max.	Max.	Max.
1st Quality Optical glass	99·8	0·1	0·02	0·1
7th Quality Green bottle glass	95·0	4·0	0·3	0·5

The percentage tolerances in composition allowed (based on the ignited sample) were :—

	SiO_2	Al_2O_3	Fe_2O_3	CaO and MgO
1st Quality	±0·1	±0·05	±0·005	±0·05
7th Quality	±1·0	±0·5	±0·05	±0·1

Limits were also proposed for grain size, which are in accordance with those generally accepted in the glass industry in this country.

Due acknowledgment is given by the writer to the various sources of information to which reference has been made in the writing of this paper.

Dyestuff Wastes and Sewage Purification

THE report of the Rivers Department of the Manchester Corporation states that from an experimental investigation carried out in connection with the treatment of sewage, it may be concluded that waste liquors resulting from the manufacture of dyestuffs exercise a slight inhibitory action on the sewage purification process. Notwithstanding this inhibitory action, sewage, containing not more than 7 per cent. of these waste liquors, may be satisfactorily purified, as viewed from the standpoint of the biochemical oxygen demand (Royal Commission test), within a reasonable period of time, although the effluents are by no means free from colour.

Society of Public Analysts

AN ordinary meeting of the Society was held at the Chemical Society's Rooms, Burlington House, London, on Wednesday, October 6, Mr. E. Richards Bolton (president) in the chair.

Certificates were read for the first time in favour of Miss Gertrude Garland Andrew, B.Sc., Messrs. Charles Edward Barrs, F.I.C., Thomas Hedley Barry, Gordon Watson Douglas, B.Sc., Clarence Victor Ferriss, B.Sc., A.I.C., and Reginald Charles Pakes, B.Sc. A certificate was read for the second time in favour of Mr. Stafford Aston, F.I.C. The following were elected members, Messrs. Francis Harrold Banfield, M.Sc., Ph.D., A.I.C., and Albert Lester Williams, A.I.C.

Abstracts of Papers

In a paper on the presence of compounds of arsenic in marine crustaceans and shell fish, by Mr. A. Chaston Chapman, F.I.C., F.R.S., it was pointed out that marine crustaceans and shell fish had been found to contain from 10 to 174 parts of arsenic (as As_2O_3) per million of the wet edible portions. Native oysters contained from 5 to 10 parts, and Portuguese oysters from 33 to 70 parts per million. In fresh water fish, shell fish and crustaceans, the amounts of arsenic ranged from only about 0·4 to 1·5 parts per million. The arsenic in the marine animals was therefore derived from the sea water, and the author gave the amounts of arsenic in sea water from various localities. Potted and canned crustacea and shell fish contained from 0·5 to 85 parts of arsenic per million. The arsenic in the urine of two experimental subjects was raised from the normal figure of about 1/200th grain per gallon to ½ grain in one case, and ⅓ grain in the other, after a meal of lobster.

It was stated in another paper by the same author on the presence of lead and other metallic impurities in marine crustaceans and shell fish that the following amounts of copper (parts per million of the dried edible portion) were found :— Lobster, 167 ; crab, 130 ; and whelks, 115. The amounts of lead ranged from 5 (whelk) to 25·6 (lobster). Native oysters contained from 12 to 400 parts and Portuguese oysters 10 to 307 parts of lead per million. Like arsenic, these metallic impurities were probably derived from the sea water.

A paper on the examination of fish for formaldehyde was presented by Messrs. A. R. Tankard, F.I.C., and D. J. T. Bagnall, F.I.C. In this it was shown that various kinds of fish gave a positive reaction in Schryvor's phenylhydrazine test, indicating the presence of 1 to 2 parts per million of formaldehyde. Since, however, trimethylamine (a common constituent of fish) could be readily oxidised to formaldehyde, a positive reaction did not necessarily indicate the presence of added formaldehyde.

The potentiometric titration of tin with potassium bromate was dealt with in a compilation by Mr. Karl Sandved. The best results (error 0·5 per cent.) were obtained, it was stated, by oxidation of the stannous tin with antimony chloride or ferric chloride, and potentiometric titration of the reduction compound with potassium bromate. A method of determining tin in the presence of antimony had been devised.

In discussing the determination of nicotine in tobacco, Mr. R. R. T. Young, M.Sc., stated that Keller's, Kissling's, and other methods had been critically examined. Accurate results were obtained by extracting the tobacco with a mixture of petroleum spirit, ether, and aqueous potash, shaking the ethereal extract with dilute (1 : 1) alcohol containing cochineal, adding excess of hydrochloric acid to the separated aqueous layer, and titrating with standard sodium hydroxide. Ammonia was best determined by distillation after precipitation of the nicotine with iodine, but little ammonia, if any, was present in the tobaccos examined.

The Prince at Reckitts' Works

THE PRINCE OF WALES, during the course of a visit to Hull extending over Wednesday and Thursday, laid a foundation stone for the new art gallery, which is being presented to the city by Mr. T. R. Ferens, of Reckitt and Sons. Subsequently the Prince visited the works of Reckitt and Sons, which is the largest in Hull, and paid particular attention to the remarkable social institutions connected with the factory, the directors of the company being among the pioneers of welfare work in industry. Visits were also made to various other factories.

Chemical Trade Returns for September

Evident Effects of the Strike

THE Board of Trade Returns for September, 1926, indicate that, as regards the trade in chemicals, drugs, dyes and colours, there was an increase of imports and a decrease of exports and re-exports as compared with the month of September, 1925. Imports were £1,232,696, as compared with £958,402, a rise of £274,294; exports were £1,647,114, as compared with £1,813,368, a fall of £166,254; while re-exports were £73,047, as compared with £81,605, a fall of £8,558.

The same note is to be found in the summary of results for the nine months ended September, 30, 1926. Imports totalled £11,293,525, as compared with £10,668,462 for the corresponding period in 1925, a rise of £625,063; exports were £16,816,638, as compared with £17,945,670, a fall of £1,129,032; while re-exports were £768,765, as compared with £927,010, a fall of £158,245.

Details of the chemical figures as given below :—

Imports

	Quantities. Month ending September 30. 1925.	1926.	Value. Month ending. September 30. 1925. £	1926. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic ..... tons	643	771	29,766	35,915
Acid tartaric .....cwt.	2,483	1,993	11,831	9,859
Bleaching Materials ,,	9,943	10,073	6,054	27,231
Borax..... ,,	4,800	2,380	5,471	2,674
Calcium Carbide.... ,,	60,805	62,049	39,974	40,277
Coal Tar products..value	—	—	59,209	177,632
Glycerine crude.....cwt.	484	24	1,210	110
Glycerine, distilled ,,	136	117	486	608
Red Lead and Orange Lead..... ,,	1,156	3,059	2,490	6,062
Nickel Oxide..... ,,	1,505	—	8,299	—
Potassium Nitrate . ,,	5,944	12,037	6,816	13,906
All other Potassium Compounds ..... ,,	151,337	141,877	50,179	54,726
Sodium Nitrate.... ,,	141,551	16,793	85,235	10,586
Other Sodium Compounds ..... ,,	20,956	47,128	13,522	39,111
Tartar, Cream of ... ,,	3,672	3,619	11,752	12,650
Zinc Oxide .....tons	1,059	658	35,858	22,715
All other Sorts .. value	—	—	170,573	290,721
DRUGS, ETC.				
Quinine and Quinine Salts .....oz.	213,286	124,189	22,175	9,669
Bark Cinchona.....cwt.	1,243	2,383	5,362	9,213
Other Sorts .....value	—	—	132,049	118,689
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products .....cwt.	72	—	801	—
Alizarine ..... ,,	53	110	1,425	2,935
Indigo, Synthetic .. ,,	—	—	—	—
Other Sorts ..... ,,	1,459	2,772	32,074	50,055
EXTRACTS FOR DYEING—				
Cutch.....cwt.	5,334	6,580	10,384	8,976
Other Dyeing Extracts ..... ,,	2,542	2,898	7,812	12,658
Indigo, Natural .... ,,	—	—	—	—
Extracts for Tanning ,,	62,051	106,754	62,423	103,554
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground ....cwt.	74,939	66,112	17,769	14,997
White Lead (dry)... ,,	15,251	12,107	30,511	23,591
All other Sorts ..... ,,	75,407	92,124	96,892	133,576
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	958,402	1,232,696

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	1,265	2,160	1,447	2,694
Acid Tartaric ..... ,,	1,018	2,338	5,826	12,737
AMMONIUM COMPOUNDS—				
Chloride.....tons	160	246	5,608	5,738
Sulphate—				
To France.....tons	436	—	5,013	—
Spain and Canaries..... ,,	10,793	1,696	125,071	18,948
Italy..... ,,	—	96	—	1,153
Dutch East Indies ,,	845	240	10,432	2,794
Japan..... ,,	5,099	2,551	59,673	29,064
British West India Islands (including Bahamas) & British Guiana...tons	466	275	5,518	3,211
Other Countries ,,	3,615	4,867	42,866	54,215
Total ..... ,,	21,254	9,725	248,573	109,385
BLEACHING POWDER...cwt.	38,758	33,825	19,810	16,356

	Quantities. Month ending September 30. 1925.	1926.	Value. Month ending September 30. 1925. £	1926. £
COAL TAR PRODUCTS—				
Anthracene.....cwt.	1,116	1,530	583	665
Benzol and Toluol galls.	473	526	76	104
Carbolic Acid.....cwt.	16,226	9,819	27,178	14,743
Naphtha .....galls.	3,664	1,422	354	187
Naphthalene.....cwts.	920	705	738	376
Tar Oil, Creosote Oil, etc.....galls.	1,153,569	933,472	38,014	29,653
Other sorts .....cwts.	33,598	30,850	21,491	23,952
Total.....value	—	—	88,434	69,680
COPPER, Sulphate of..tons	309	1,482	7,396	30,326
DISINFECTANTS, INSECTICIDES, ETC. .....cwt.	44,787	33,074	115,738	86,616
GLYCERINE—				
Crude .....cwt.	5,433	1,877	15,720	7,892
Distilled..... ,,	8,239	17,423	31,884	77,646
Total ..... ,,	13,672	19,300	47,604	85,538
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	1,776	1,600	3,609	2,887
Nitrate..... ,,	1,344	1,894	2,723	3,677
All other Sorts ..... ,,	1,044	569	17,123	9,848
Total ..... ,,	4,164	4,063	23,455	16,412
SODIUM COMPOUNDS—				
Carbonate .....cwts.	346,839	368,445	102,046	113,572
Cautic ..... ,,	134,704	131,456	104,068	99,073
Chromate and Bichromate ..... ,,	1,682	2,732	2,689	3,797
Sulphate, including Salt Cake..... ,,	145,562	236,547	20,041	34,811
All other Sorts ..... ,,	49,384	40,256	67,635	52,956
Total ..... ,,	678,171	779,436	296,479	304,209
ZINC OXIDE.....tons	114	69	5,202	2,459
Chemical Manufactures, etc., all other Sorts.value	—	—	301,163	282,120
Total of Chemical Manutures and Products.....value	—	—	1,166,735	1,024,270
DRUGS, ETC.—PREPARATIONS—				
Quinine and Quinine Salts.....oz.	150,197	189,374	19,857	18,448
Opium .....lb.	225	84	348	156
All other Sorts....value	—	—	232,678	254,885
Total ..... ,,	—	—	252,883	273,489
DYES AND DYESTUFFS—				
Coal Tar Products ..cwt.	9,613	3,868	72,902	39,511
Other Sorts ..... ,,	4,010	6,939	5,403	7,339
Total ..... ,,	13,623	10,807	78,305	46,850
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground ..cwt.	2,005	985	880	370
White Lead (dry)... ,,	8,697	3,943	21,078	9,186
Paints and Colours, ground in Oil or water ..... ,,	46,628	47,103	109,045	107,007
Paints and Enamels Prepared ..... ,,	26,179	29,321	88,881	90,289
All other Sorts .... ,,	49,380	48,910	95,561	95,653
Total ..... ,,	132,889	130,262	315,445	302,505
Total of Chemicals, Drugs, Dyes and Colours....., value	—	—	1,813,368	1,647,114

Re-exports

	Quantities. Month ending September 30. 1925.	1926.	Value. Month ending September 30. 1925.	1926.
			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid, Tartaric .....cwt.	48	75	312	484
Borax..... ,,	1,000	45	1,050	54
Coal Tar Products...value	—	—	289	2,829
Glycerine, Crude .. cwt.	30	—	66	—
Glycerine, Distilled . ,,	1	—	14	—
Potassium, Nitrate ,,	117	43	188	73
Sodium Compounds—				
Nitrate..... ,,	728	6	323	7
Tartar, Cream of ... ,,	621	542	2,241	2,050
All other Sorts....value	—	—	12,072	16,737
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	16,983	19,000	2,111	1,951
Bark Cinchona ....cwt.	242	403	867	4,203
All other Sorts value	—	—	40,498	31,574
DYES AND DYESTUFFS—				
TANNING—				
Cutch .....cwt.	2,728	1,811	4,431	2,820
All other Sorts .... ,,	510	137	1,449	701
Indigo, Natural .... ,,	22	5	260	149
Extracts for Tanning ,,	10,267	3,472	10,487	4,140
PAINTERS COLOURS AND MATERIALS ..... ,,	1,446	1,106	4,317	3,929
Total of Chemicals, Drugs, Dyes and Colours.....value	—	—	81,605	73,047

Reviews

"THE ECONOMIC CONSEQUENCES OF SOCIALISM." By George W. Gough. Philip Allan and Co., Ltd. 3s. 6d.

Mr. George W. Gough is one of those very rare creatures who can write attractively about economic questions and his new book, *The Economic Consequences of Socialism*, the latest of the valuable series called the *Westminster Library*, will in consequence receive a hearty welcome from all who are concerned about the education of the public in the difficult problems of economics. When, nearly two years ago, I conducted an inquiry in the columns of *The Times* into the supply of economic literature, I placed this author's *Wealth and Work* at the very top of the list of books which could and should be read by everyone. *The Economic Consequences of Socialism* is, of course, a defence of the capitalist system and a plea for a return to individualism, but it differs from most of the books written with these objects in that it can be read with pleasure even by the socialist.

Mr. Gough is endowed with a judicious mind as well as a witty pen and he writes for the benefit of those who want to know and understand rather than for the party bigot. His chapter on the capitalist system as seen by the socialist might well make a Fabian tract. It is the most masterly summary of the socialist case that I remember and is without a trace of bias. The advocate of socialism might write it another way, but he would use the same material. He would leave the impression on the mind of the reader that socialism had not been fairly treated, whereas Mr. Gough comes to the opposite conclusion: "For my own part, I must confess that the more I study the past, the more certain I am that the one thing that has never had a dog's chance in history is individualism."

This writer avoids the error so common with the rest of us, in that he does not minimise the strength of the enemy's argument. He makes no pretence that things are right, and accepts as just and proper the discontent that is so widespread among the people. Indeed, he glories in it, and claims that discontent is the mother of progress. His quarrel with socialism is not that it criticises the existing order of things but that it fails to provide the right remedy.

This little book is written with a fund of humour and a wealth of illustration unique, and is in itself a complete answer to the charge that economics is essentially a dryasdust science. Economic writers are for the most part technical and dull or popular and unscientific. Mr. Gough is meticulous on the technical and scientific side and, with it all, as bright and entertaining as the best of the popular novel writers:—"It would be absurd to ignore the powerful appeal which socialism makes to the working classes, and not to them alone. The workers are not content with things as they are, and if they were it would be the plain duty of every right-minded citizen to do his best to make them discontented. But socialism, exactly understood and placed apart from things which are wrongly confused with it, is in its nature a making worse of existing social evils. It is true that social progress is due to efforts towards an ideal. The case presented in this book is that socialism is the wrong ideal to aim at. In a country like England, which has the most experienced and public-spirited electorate in the world, the propaganda of socialism can be countered in part by public discussion, but the arch-enemy of socialism will be an intelligent, understanding, and human-hearted capitalism. As an economic creed socialism is wrong and the economists can prove it wrong, but it will be foolish to leave the defence of the existing order to the economists. Capitalism will be saved, but it will be saved by the capitalists." ERNEST J. P. BENN.

EDIBLE OILS AND FATS, THEIR SUBSTITUTES AND ADULTERANTS. By G. D. Elsdon, B.Sc., F.I.C., Lancashire County Analyst. Ernest Benn, Ltd., 1926. Pp. 521. 45s.

Mr. Elsdon's book is a thoroughly comprehensive treatise which will at once take its place amongst the standard works of reference on the analytical examination of fatty oils. The work involved in compilation of a manual of this kind at the present day is enormous, and praise is due to the author for the thoroughness with which the task has been carried out, and also for the concise manner in which, having regard to the great number of references which are necessarily cited, the data have been presented. This aspect of the book is also greatly assisted by the good indexes and abundant sectional bibliographies which are given, and by the convenient system of giving the majority of original references as abstracts either in the *Analyst* or the Journal of the Society of Chemical Industry.

The analytical methods employed in the field of oils and fats, whether technical or dealing with the chemical constitution of the components, are both numerous and involved, owing to progressive improvements, real or supposed, which have been superimposed continuously upon the original processes proposed; at the same time there exist many lacunæ in our knowledge of these materials, probably more so than in any other branch of organic chemistry at the present day.

It is, therefore, good to find that the book stands out in its class in that the author does not merely describe, non-critically, a string of analytical processes for the determination, say, of the iodine number of a fat, but adds a paragraph "Method suggested," in which the relative values of the variant processes are assessed succinctly for particular cases which may arise. Similarly, he indicates freely throughout the text those parts of the subject which are still in much need of further research, and in this respect the work is to be regarded not only as an analytical handbook, but as an aid and stimulus to the investigator.

It may be asked, perhaps, whether certain sections of the book fall strictly within the scope of "Edible Oils and Fats," such as those on glycerol, and on rosin and rosin oils; also, perhaps the customary long lists of salts of the fatty acids on pp. 20-30, 34, 35, etc., might have been shortened with advantage, and again the number of individual oils described on pp. 168-187, 196-211, 237-249, 279-300, 323-354 may be unnecessarily large, although it is admittedly difficult to know where to draw the line.

The following minor points may be referred to for attention in the second edition which undoubtedly soon will be necessary:—P. 36: "Unsaturated acids $C_nH_{2n-2}O_2$" should be "$C_nH_{2n-4}O_2$"; p. 46: Twitchell's lead salt-alcohol method is sufficiently sound to warrant more extended mention. P. 54: The references to "p. 21" and "p. 140," obviously do not refer to the present book and have apparently been transcribed from Crowther and Hynd's original paper. P. 103: "Oswald" should read "Ostwald." P. 305: The reference to Matthes and Rohdich's work refers to unsaponifiable matter from "this quantity of fat," "this quantity," however, not being specified.

T. P. HILDITCH.

Indian Chemical Notes

(From Our Indian Correspondent.)

The Government of India have appointed a special officer to investigate the conditions in the salt industry with a view to increasing salt production to displace the large imports now coming into India. Great attention is also being paid meanwhile to the development of the Sambhar Lake in Rajputana in Central India, which is an important source of salt for Northern India. The Government of Baroda State has also promoted an important enterprise for the production of salt and its by-products at the recently opened port of Okha.

Burma Ruby Mines

The Burma Ruby Mines, as a going concern, are now offered for sale at Rs. 8 lakhs. They have been operated for many years, and are said to have produced gems to the value of Rs. 3 crores from surface workings. It is also reported that recent developments have resulted in opening up rich sapphire ground which has yielded gems valued at Rs. 80,000 during the last three months. The mines are connected with the Irrawaddy river by a good motor road, and the area of concession is nearly 400 square miles. The present lease will continue for more than five years. The conditions of the lease are that 30 per cent. of the net profits are payable to Government. The assets are said to comprise Rs. 7 lakhs.

Raw Rubber

The exports of raw rubber from Madras increased from 84,000 cwt. valued at Rs. 75 lakhs to 109,000 cwt. valued at Rs. 144 lakhs, in increase of 29 per cent. in quantity, and 93 per cent. in value. The chief feature of the rubber trade during the year has been the greatly increased consumption and violent fluctuation in prices, especially in London and New York, owing to reduction of stocks. The average declared value rose from annas 12-8 to Rs. 1-3-0 per lb.

The proposed Indian School of Mines at Dhanbad, in the centre of the coal mining districts, and about 170 miles from Calcutta, will be opened on November 1, next. It will be fully equipped and staffed for high grade instruction in mining engineering and geology. Laboratories and workshops will be provided for practical instruction and training, and a high standard qualification will be demanded from the students before admission.

Salt Works in Baroda

A company is being formed in the Baroda State to manufacture salt and alkali in the Okhamandal district of the State, and for that purpose to establish a salt works at Port Okha, which has been recently opened by the Baroda Government. The necessary sanction from the Government of India for the manufacture and export of salt has already been obtained, and the concessions including monopoly rights have been granted to Mr. K. H. Vakil, of Bombay, an expert in salt manufacture. He will be the principal man in the proposed company, and the Director of Commerce and Industries, Baroda, will be a member of the Board to safeguard the interests of the State. The construction of the saltworks is being taken in hand at once, and the product will mainly be exported to Bengal, where there are no indigenous salt-producing works and where salt supplies are almost entirely imported from abroad.

Chemistry at the Northampton Polytechnic

The Northampton Polytechnic Institute, St. John Street, London, E.C.1, has issued its "Announcements" for the session 1926–27. The department of applied chemistry (head of department, Mr. S. Field, A.R.C.S.) will give evening courses in chemistry, electro-plating, fuel technology, metallurgy and glass working. A course suitable for the National Certificate in Chemistry (awarded jointly by the Board of Education and the Institute of Chemistry) has been arranged, and application has been made for its recognition. Special courses include the analysis of works products; fuels and combustion; electro-chemistry; metal finishing processes and metal colouring; electro-deposition; boiler house chemistry; and steel and its thermal treatment. The evening classes commenced on Monday, September 20. There are day classes in engineering, which commenced on Monday, September 27.

The Case of Madden *v.* Holland

To the Editor of The Chemical Age.

Sir,—The attention of this Association has been drawn to the account entitled "Contracts of Service" in the *Journal of the Institute of Chemistry*, Part IV, 1926.

It is perfectly well known that the Legal Aid Department of this Association made these proceedings possible, and it was reported in the chemical press that the representatives of the Association gave evidence as to the custom of the profession. By some deplorable misunderstanding, neither of these important facts appears in the Institute Journal's report.—I am, etc.,

Hy. T. T. Rhodes,
General Secretary, British Association of Chemists.

"Empire House," 175, Piccadilly, W.1.

Aero Engine Fuels

Colonel the Master of Sempill, the new chairman of the Royal Aeronautical Society, discussed the present and future position of aero engine fuels in his inaugural address, delivered in London on Thursday, October 7. He said that it would be unwise to become unduly distressed as to the exhaustion of the world's oil supplies, as everything pointed to the existence of large supplies as yet untapped. The production of shale oil was not in a very healthy condition in this country, but it was fair to assume that it would experience greater prosperity. In a reference to power alcohol, he pointed to the admission by Dr. Monier-Williams, in his treatise on the subject a year or two ago, that it would be extremely difficult for alcohol to compete with petrol, even if the material from which it was made—such as vegetation and waste materials—cost nothing at all. It seemed fair to assume that there would be no sudden change, but rather a growing use of alcohol in fuel mixtures of petrol and/or benzol. He had procured a sample of light fuel produced by a low temperature carbonisation process, and on testing it was found to be most useful for aviation purposes. The address also dealt with the question of the addition of "dopes," such as lead tetraethyl, to petrol for use in aero engines, and with the use of colloidal metals for the same purpose—that is, the prevention of "knocking."

The Streatfeild Memorial Lecture

The ninth annual Streatfeild memorial lecture will be delivered by Mr. F. C. Robinson at the Institute of Chemistry, 30, Russell Square, London, W.C.1, on Friday, November 19, 1926, at 8 p.m., the subject being "The Chemist in the Non-Ferrous Metallurgical Refinery." Professor G. G. Henderson, D.Sc., F.R.S., president of the Institute, will occupy the chair. Tickets of admission are obtainable on application to the Registrar, Institute of Chemistry, 30, Russell Square, London, W.C.1. Frederick William Streatfeild was on the staff of the City and Guilds Technical College, Finsbury, from its foundation until his death in March, 1918, as a teacher of applied chemistry. He won the esteem and affection of several generations of Finsbury students, who established a fund for the provision of an annual memorial lecture to mark their appreciation of his work and worth. Previous Streatfeild memorial lecturers have been:—1918, Sir William Pope; 1919, Prof. G. T. Morgan; 1920, J. H. Coste; 1921, W. P. Dreaper; 1922, Prof. C. H. Desch; 1923, E. M. Hawkins; 1924, Julian L. Baker; and 1925, Francis H. Carr. On the closing of Finsbury Technical College, the administration of the fund and the arrangements of the lecture were entrusted to the Institute of Chemistry.

British Chemistry Dinner

A British chemistry dinner has been arranged, the following bodies agreeing to participate: The Chemical Society, the Society of Public Analysts, the Institute of Chemistry, the Society of Chemical Industry, the Faraday Society, the Biochemical Society, the Institution of Petroleum Technologists, the Oil and Colour Chemists' Association, the Association of British Chemical Manufacturers, and the Chemical Industry Club. The dinner will take place at the Connaught Rooms, Great Queen Street, W.C.2, on November 12, at 7.30 p.m. After the dinner there will be a few short speeches, and a dance, commencing at 9 p.m. Tickets will cost 12s. 6d. per head, exclusive of wines.

Metallurgical Societies in the Midlands

A Co-operative Programme

THE scientific or technical worker who is a member of several scientific societies finds many demands on his leisure to attend meetings of these bodies, and usually has to adopt a selective procedure, attending only those meetings where lectures or papers have a definite bearing on his own particular calling, thereby losing contact with many valuable problems, the discussion of which might prove of practical service to him. Realising this, a co-ordinating committee has been formed in the Birmingham district, consisting of three delegates from each of the Councils of the Staffordshire Iron and Steel Institute, the Birmingham Metallurgical Society, and the Birmingham Local Section of the Institute of Metals. The function of this committee has been to produce a unified programme of lectures, discussions, etc., for the three societies mentioned, thus precluding the overlapping of dates of meetings, and repetition of subject matter at lectures and consequent loss of members' time.

The subjects chosen are of such a character as will meet the requirements of each component society. Economies are anticipated in the cost of general working, printing, and administration of the project as compared with the issuing of three distinct programmes. It is to be distinctly understood, however, that this procedure in no way interferes with the identity or membership of each individual society and no attempt at any form of amalgamation in a general sense has been suggested or desired. The promoters of this scheme feel that a closer bond of sympathy may be obtained, as well as much useful interchange of thought between the collective members attending the meetings arranged by this committee. The arrangement is that this innovation should be for the present year only as an experiment. The prospects, so far, are promising, as an excellent programme has been arranged.

The Tar Conference

AT the Tar Conference which will be held at the Manchester College of Technology, on November 26, under the auspices of a joint Committee representing the Institute of Gas Engineers, the Fuel Section of the Society of Chemical Industry, and the Coke Oven Managers' Association, the following will present papers: Mr. F. S. Sinnatt and Mr. J. G. King (of the Fuel Research Board), "A Study of Tars and Oils Obtained from Coal"; Mr. H. Hollings (chief gas chemist to the Gas Light and Coke Co.), "The Influence of Carbonising Conditions upon Free Carbon Content of Tar"; Dr. A. Parker (research chemist to the Institution of Gas Engineers), "Tar from Steamed Vertical Retorts"; Mr. A. C. Tait (of the Templetown Tar Works), Consett, "Coal Tar Disinfectants"; Mr. W. Gordon Adam (manager of the By-Product Works, Beckton, in consultation with Mr. H. W. Robinson, of the Midland Tar Distillers, Ltd., representing the British Road Board Association), "Tar from the Point of View of the Highway Authority"; Mr. J. McLeod (manager of the By-Product Works, Glasgow), "Notes on Vertical Retort Tar"; Mr. W. Gordon Adam, "A Plea for Standardisation of Analytical Methods in Coal Tar Products Specifications"; Mr. G. F. H. Polglaze (of the South-Western Tar Distillers, Stamshaw Chemical Works, Portsmouth), "The Testing of Road Tars"; Mr. H. M. Spiers (senior chemist to the Woodall-Duckham Co.), "The Viscosity of Tar"; and Mr. H. F. Taylor (of Messrs. Hardman and Holden, Manchester), "Pitch."

Death from Gangrene

THE Sheffield Deputy Coroner, who had sitting with him Mr. Arthur Wolfe, H.M. Inspector of Factories, held an inquest on Tuesday, October 5, on Frank Edward Broadhurst (37), employed as a labourer by the Sheffield Chemical Co., and who lived at 127, Sorby Street, Sheffield. The Deputy Coroner said a jury had been summoned because the widow thought that the fact that he had been employed at a chemical works might have had something to do with his death. The widow stated that her husband came home on July 30 complaining of being gassed at his work. He was not attended by a doctor, however, and continued to work until August 16, when his neck and face began to swell. Francis Carter, plumber's labourer, said he remembered Broadhurst complaining of a touch of gas. Dr. B. Guest, of the Royal Infirmary, who had made a post-mortem examination, said death was, in his opinion, not due to gassing but to gangrene of the lung following cancer. The jury returned a verdict of "Death from natural causes."

Chemicals at the Fair

DESPITE the holiday season and the serious effects of the coal stoppage, applications for space in the London Section of the British Industries Fair, which is to be held at the White City from February 21 to March 4, 1927, have been reaching the Department of Overseas Trade daily. The total area applied for already considerably exceeds the whole area occupied at the last Fair, and there is every indication that additional buildings will have to be linked up with those previously used. Early arrangements will have to be made for any such extension, however, and firms are advised to make their requirements known at once. Among applicants for space in the Chemicals Section, are: Acme Chemical Co., Ltd.; F. Allen and Sons (Poplar), Ltd.; Ayrton Saunders and Co., Ltd.; A. Boake Roberts and Co., Ltd.,; Boots Pure Drug Co., Ltd.; J. Crosfield and Sons, Ltd.; Cussons, Sons and Co., Ltd.; Dental Manufacturing Co., Ltd.; Dry Rot and Fire Prevention Co., Ltd.; The Erasmic Co., Ltd.; Furmcto Chemical Co.; Gas Light and Coke Co.; T. Hedley and Co., Ltd.; G. Holliday and Co., Ltd.; Melehurst Barytes Co., Ltd.; Fletcher Miller, Ltd.; Netherwood, Dalton and Co., Ltd.; R. W. Phillips, Ltd.; The Radio Co., Ltd.; The Rodent and Insect Pest Destruction Co., Ltd.; William A. Webb, Ltd.; Williams (Hounslow), Ltd.

Insulin and Its Manufacture

THE opening meeting of the Bristol section of the Society of Chemical Industry took place at the University, on Thursday, October 7, when the president of the society, Mr. Francis H. Carr, C.B.E., gave an address on "Insulin and Its Manufacture." The chair was taken by Mr. George Gray. Mr. Carr gave an interesting and illuminating account of insulin and the method in which it was prepared. He discussed the experiments which had led up to the discovery of insulin, and afterwards described its physiological and chemical properties so far as they had been worked out. By the means of lantern slides Mr. Carr gave a description of the many processes necessary for the production of insulin and the machinery used for the purpose. At the close he spoke of the success which had been obtained by the use of insulin in the treatment of diabetes. A vote of thanks was passed to Mr. Carr for his address, on the proposition of Professor Francis, seconded by Dr. Butler.

Institute of Chemistry: London Section

THE first general meeting of the 1926–27 session of the London and South Eastern Counties Section of the Institute of Chemistry will be held at the offices of the Institute, 30, Russell Square, London, on Wednesday, October 20, at 8 p.m., when there will be a discussion on "The Report of the Special Committee of the Council upon Registration." The annual general meeting of the section will be held on Wednesday, November 17, at 8 p.m. The December general meeting will be open for members who wish to bring forward for discussion matters concerning the policy of the Institute.

Coal Tar Research in Huddersfield

AN important decision has recently been made in regard to the coal tar chemistry research department of Huddersfield Technical College. This department was established ten years ago to train students in research methods. Owing to various reasons, it has been suggested of late that the department should be amalgamated with the similar department of the University of Leeds, and that it should move to Leeds for this purpose. An inquiry into the matter, during which evidence from chemists and industrialists was heard, has led the authorities to decide instead to amalgamate the coal tar and pure chemistry departments of Huddersfield Technical College.

From Week to Week

MR. J. H. BLAKELOCK, M.Sc., Ch.B.(Sheffield), has been appointed assistant bacteriologist in the University of Sheffield.

THE RADIUM PRODUCTION of the Joachimsthal (Czecho-Slovakia) works amounted in 1925 to 1·5 grams, bringing the amount produced since 1902 to 12 grams.

MR. A. BEEBY THOMPSON, on Tuesday, read before the Institution of Petroleum Technologists a paper entitled "The Significance of Surface Oil Indications."

THE ADDRESS of the Birmingham Metallurgical Society has been changed from the Chamber of Commerce Buildings to 100, Rotton Park Road, Edgbaston, Birmingham.

ARTIFICIAL WOOL may soon be made in France from wood pulp on the system employed in the United States, as experiments are shortly to take place in the Nord region.

DR. R. H. PICKARD, F.R.S., head of Battersea Polytechnic, has been elected by the science graduates of London University to represent them on the University Senate.

SIR WILLIAM BRAGG, F.R.S., will give a series of four lectures on "The Imperfect Crystallisation of Common Things," at the Royal Institution, beginning on Tuesday, November 23.

INDIGO EXPORTS FROM INDIA in the first seven months of 1926 amounted to 1,479 cwts., of which 463 cwts. came to the United Kingdom. The corresponding quantity for 1925 was 893 cwts.

SIR HENRY WICKHAM, the founder of the rubber industry of the Malay States, is to receive a grant of £8,000 from the Governments of the Straits Settlements and Federated Malay States.

F. W. BERK AND CO.'S chemical works at Morriston, which was closed down from the date of the general strike till a few weeks ago, is again threatened with cessation of work owing to lack of coal.

MR. W. J. U. WOOLCOCK was the guest of honour at a private dinner given by the council of the Society of Chemical Industry on Thursday, in recognition of his services to the Society in his period of office as president.

FERTILISER SALES, LTD., of Adelaide House, King William Street, London, have appointed Mr. W. R. Thomson, formerly a member of the staff of the Royal Agricultural College, Cirencester, as director of propaganda for calcium cyanamide in Ceylon.

A FIRE BROKE OUT on Friday, October 8, in the disinfectant department at the works owned by Thornton and Ross, Ltd., manufacturing chemists, Colne Vale Road, Milnsbridge, near Huddersfield, and caused damage estimated at £800.

SIR MAX MUSPRATT, president of the Federation of British Industries and chairman of the United Alkali Co., Ltd., was the guest of honour at a luncheon of the American Chamber of Commerce in London, at the Hotel Cecil, on Thursday. Mr. F. E. Powell, president of the Chamber, presided.

PROFESSOR J. NORMAN COLLIE, professor of organic chemistry in University College, London, is among a number of eminent scientists and others on whom the honorary degree of LL.D. of the University of St. Andrews will be conferred on the occasion of the forthcoming installation of Dr. Nansen as Rector of the University.

A NEW ALCOHOL MOTOR FUEL is being produced in North Borneo. The Director of Agriculture estimates that the fuel can be manufactured to the extent of nearly 60,000,000 gallons yearly from a species of palm growing luxuriantly in the island. An experimental plant has been distilling 200 gallons of fuel daily. The fuel costs about 9d. per gallon to produce in quantity.

THE PROVOST AND FELLOWS OF DENSTONE (the Midland Woodward Society) have elected the Rev. A. V. Billen, M.A. (Oxon), Ph.D. and B.D. (Lond.), to the Headmastership of St. Oswald's School, Ellesmere, in succession to the Rev. T. H. Hedworth, lately preferred by the Lord Chancellor to the rectory of Wellesbourne, Warwick. Dr. Billen will take up the headmastership in January.

APPLICATIONS ARE INVITED for the following appointments: Lecturer and Demonstrator in Inorganic and Physical Chemistry in the University of Sydney, New South Wales. £450–£40–£700. The Agent-General for New South Wales, Australia House, Strand, London, W.C.2. October 30.—Reader in Chemistry at Raffles College, Singapore. The Board of Education or the Scottish Education Department, Whitehall, London, S.W.1. October 22.

THE BRISTOL SECTION of the Institute of Chemistry has arranged the following programme: November 8, a public lecture by Mr. R. B. Pilcher, registrar and secretary of the Institute, on "Alchemists and Chemists in Art and Literature"; January 19, 1927, a lecture by Mr. T. Wallace, M.C., M.Sc., A.I.C., deputy director of the Agricultural Research Station at Long Ashton, on "Researches on the Nutrition of Fruit Trees"; March 11, 1927, annual general meeting. The meetings will be held in the chemical department of the University.

SIR ALFRED MOND returned on Tuesday from a visit to the United States and Canada, where he had been studying industrial conditions.

A "DEUTSCHE KAUTSCHUK-GESELLSCHAFT" (German Rubber Society) has been formed, to unite chemists and engineers interested in the rubber industries.

DR. G. VON HEVESY has been appointed professor of physical chemistry in the Technical High School, Hanover, in succession to Professor M. Bodenstein.

THE UNITED STATES SUPREME COURT has upheld the sale of German dye patents seized during the war, states a Central News message from Washington.

COCHRAN AND CO., ANNAN, LIMITED, inform us that their London office address, as from October 8, will be 137, Victoria Street, S.W.1, instead of 7c, Lower Belgrave Street, S.W.1.

THE GERMAN COMMISSION ON FAT ANALYSES (for providing uniform methods of investigation for the fat industry) has made a report (published in the German press) on suggested methods.

INDUSTRIAL COMBUSTION ENGINEERS, LTD., of Astor House, Aldwych, London, announce that owing to expansion of business their head office and works have been removed to 31-37, Wybert Street, London, N.W.1.

RECENT WILLS INCLUDE:—Mr. James Stewart, formerly editor of the *Gas World*, and a director of Benn Bros., Ltd., £31,145.—Mr. Duncan Shaw, of Wemyss Bay, Renfrewshire, sugar refiner, £93,534 (personal estate).

THE UNIVERSITY OF WALES has now definitely recognised the first year course in mechanical engineering and the third year course in industrial chemistry at the Technical College, Cardiff, for the purpose of the new Bachelor of Technology Degree of the University of Wales.

FINSBURY TECHNICAL COLLEGE OLD STUDENTS' ASSOCIATION will hold its fifteenth annual dinner at the Engineers' Club, London, on Saturday, October 30. Tickets are 7s. 6d. each, exclusive of wine, and can be obtained on application to Mr. R. O. Grant, 30, Bedford Row, London, W.C.1.

AN INTERNATIONAL COPPER MARKETING ORGANISATION, known as Copper Exporters, Incorporated, has been organised in the United States. In addition to members in the United States, it will have as associate members various British, German, Belgian, French, and South American companies. Among these is the British Metals Corporation.

SIR JOHN BRUNNER presided over the opening ceremony, which was performed by Lady Brunner, on Tuesday, of a five days' sale of work, organised by the Southport Liberal party. The bazaar is being held in the Cambridge Hall, Southport, with the object of raising £6,000 for local and national purposes, £1,000 of which has been contributed by Sir John Brunner.

THE ROYAL SANITARY INSTITUTE will hold a Health Exhibition at Hastings, from July 11 to July 16, 1927, in connection with the Thirty-Eighth Congress of the Institute. Among the sections of the exhibition which will interest chemists are those dealing with industrial hygiene, foods and beverages, etc. Further particulars may be obtained from the Secretary of the Institute, 90, Buckingham Palace Road, London, S.W.1.

PROFESSOR W. J. MÜLLER, director of the scientific inorganic laboratory of the Farbenfabriken vorm. F. Bayer and Co. in Leverkusen (now part of the I.G.), has been elected professor of the chemical technology of inorganic substances in the Technical High School, Vienna. Professor Müller has had a very distinguished career, and had been at Leverkusen since 1911. While there (during the war) he worked out his process for the production of sulphuric acid and cement from gypsum, a process which has now developed greatly.

Obituary

DR. E. S. BREIDENBAUGH, professor of chemistry in Gettysburg College, aged 77.

MR. JOHN EDWIN CALVERT LORD, of St. Annes-on-Sea, managing director of J. E. C. Lord (Manchester), Ltd., Weaste, Manchester, aged 67.

DR. ERIC CRAIG PORTER, works chemist at a shoe factory in Stafford. He was killed at Trentham, near Stoke-on-Trent, on Monday, in an accident to a motor car which he was driving from Manchester. Dr. Porter, who was 29 years of age, was engaged formerly in research work at Leeds University.

PROFESSOR ALEXANDER GUTBIER, professor of chemistry in and rector of the University of Jena, on October 4, aged 50. Among his many publications were researches on selenium, tellurium, bismuth, and the noble metals; on atomic weights, chemical analysis, colloidal metals, and protective colloids. He was the author (alone and in collaboration with others) of various chemical books.

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Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

257,689. AMMONIA, MANUFACTURE OF. H. W. Blackburn, 118, Holborn, E.C.1, and W. Thomas, 22, Burns Road, Harlesden, London, N.W.10. Application date, June 9, 1925.

Ammonia is synthetically produced by passing a mixture of nitrogen with a large excess of steam over heated iron, or the lower oxides and hydroxides of iron and nickel. The proportion of steam to nitrogen should be approximately 4 : 1 and the pressure about 30 lb. per square inch. If metallic iron, ferrous oxide, or hydroxide is used as the catalyst, a temperature of 450°–550° C. is employed, and if nickelous oxide or hydroxide is used, the temperature may be 200°–800° C. When iron is used as a catalyst, the yield may be improved by the addition of nickel, in which case a temperature of about 1,000° C. is employed. The process avoids the use of highly purified hydrogen and very high pressure, and the yield compares favourably with that obtained by the usual synthetic process.

257,968. ACETIC ANHYDRIDE, MANUFACTURE OF. H. Dreyfus, 8, Waterloo Place, London, S.W.1. Application date, April 9, 1925.

Acetic anhydride is obtained by passing acetic acid vapour over water-binding agents such as bisulphates, or pyrosulphates, particularly of the alkali and alkaline earth metals, zinc chloride, but not calcium chloride or sulphuric acid. The temperature may vary from 200°–1,000° C., the speed of passage of the vapour increasing with the temperature. Substances such as pyrosulphates are not subjected to a decomposing temperature. The water-binding agent may be regenerated continuously by circulating it to an apparatus in which the absorbed water is removed by heating, and then returning it to the process. The reaction gases may be subjected to fractional condensation to separate the anhydride from the water vapour as described in Specification No. 256,663 (see THE CHEMICAL AGE, Vol. XV, p. 278).

257,979. AROMATIC AMINES, SULPHONATION OF. John W. Leitch and Co., Ltd., and A. E. Everest, Milnsbridge Chemical Works, Huddersfield. Application date, June 2, 1925.

The process is for the sulphonation of aromatic amines and more particularly the treatment of the condensation product of the amine and an aromatic sulpho-chloride. The condensation product is treated with concentrated sulphuric acid and the sulphonation and elimination of the sulpho group are carried out in the same treatment. In an example, paratoluol-sulpho-*p*-toluide is dissolved in 98 per cent. sulphuric acid, and the solution heated to 70° C. The reaction causes a further rise in temperature, and when complete the product is poured into water. The product, *p*-toluidine-sulphonic acid, is collected by filtration. The temperature may be 60°–80° C., using 95–98 per cent. sulphuric acid, but if oleum is used the temperature may be lower. The reaction has been found effective with the condensation products of aniline, ortho-toluidine, paratoluidine, ortho-chloraniline, parachloraniline, para-anisidine, ortho-anisidine, para-phenetidine, α-naphthylamine, β-naphthylamine, metaxylidine, mixed xylidines with aromatic sulphochlorides, but is not effective with benzidine, tolidine, dianisidine, amino-azobenzol, amino-azo-toluol, meta-nitro-paratoluidine, paranitraniline, metanitraniline, 3-nitro-4-chloraniline, 3 : 5-dinitro-4-chloraniline, or 3 : 5-dinitro-paratoluidine. Examples are also given of the treatment of benzene sulpho-anilide, paratoluol-sulpho-α-naphthalide, and paratoluol-sulpho-paratoluidine.

257,991. DYESTUFFS, PREPARATION OF. O. Y. Imray, London. From Soc. of Chemical Industry in Basle, Switzerland. Application date, June 8, 1925.

Solid and dry preparations of vat dyestuffs are obtained by mixing or milling the dyestuff with sulphite cellulose waste liquor, or a salt of a lignin sulphonic acid, with or without the addition of a salt of a sulphonated soap, and drying the paste obtained. These products are easily dispersed in water with formation of colloidal suspensions or solutions. Thus an anthraquinone vat dyestuff may be treated in this manner to obtain a dry powder which forms a suspension in water so fine that it dissolves immediately on the addition of hydrosulphite and caustic soda lye. When indigoid dyestuffs or vat dyestuffs derived from benzoquinone are used, the product dissolves in hydrosulphite and an alkali which is not caustic.

258,020. CELLULOSE ACETATE, MANUFACTURE OF. H. J. Mallabar, Rosslyn, The Avenue, Watford, Herts. Application date, June 17, 1925.

Cellulose acetate obtained by the use of sulphuric acid as a condensing agent is soluble in acetone, but usually contains combined sulphuric acid which is detrimental. In this invention, a cellulose acetate is obtained which is soluble in acetone, but contains no sulphuric acid. The cellulose is preliminarily treated with acetic acid and sulphuric acid. The sulphuric acid is neutralised and acetylation is effected in the second stage in the absence of free sulphuric acid, but in the presence of a limited quantity of zinc chloride. After the preliminary treatment, the sulphuric acid is neutralised by adding a solution of alkali acetate in acetic acid to convert it into alkali sulphate, and the subsequent acetylation is effected at 30°–40° C. with acetic anhydride, zinc chloride being present in the proportion of 15–25 per cent. of the cellulose instead of the 50 per cent. usually employed.

258,048. SOLID COMPOUNDS OF AMMONIA, CARBON DIOXIDE AND WATER, PRODUCTION OF. Synthetic Ammonia and Nitrates, Ltd., and T. Coxon, Billingham, Stockton-on-Tees, Durham. Application date, July 23, 1925.

Commercial ammonium carbonate having approximately the composition $NH_4HCO_3NH_2CO_2NH_4$ is unstable below 30° C. in the presence of water, so that if this salt is obtained from aqueous solution, its preparation, separation, and drying must be effected above this temperature. These difficulties are avoided in this invention, and solid compounds are obtained containing 22–40 per cent. of ammonia. Ammonia gas and carbon dioxide are passed into water at 20–50° C. till their concentrations are each about 30 per cent. by weight. Solid ammonium carbamate is then precipitated, and the gases are afterwards supplied in the proportion of ammonia 2 parts, carbon dioxide 1 part, so that ammonium carbamate is continuously produced. The solid product, containing about 10 per cent. of water, is separated by filtration or otherwise, and is then treated with carbon dioxide at ordinary temperature and at increased pressure. Additional water may be added if necessary, and its proportion enables the composition of the final product, which is quite dry, to be controlled.

258,060. CHLORO-AND NITRO-CHLORO-DERIVATIVES OF META-HYDROXYBENZALDEHYDE, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, and H. H. Hodgson, 136, Paley Road, Bradford. Application date, August 13, 1925.

A solution of *m*-hydroxybenzaldehyde in cold glacial acetic acid is chlorinated until sufficient chlorine for monochlorination is absorbed. The 2-chloro-3-hydroxybenzaldehyde is separated from the residue obtained by evaporation, by fractional crystallisation and fractional neutralisation with aqueous sodium carbonate. The 2-chloro-derivative is of greater acidity than the admixed 6-chloro-3-hydroxybenzaldehyde, so that sufficient aqueous sodium carbonate can be used to retain only the former in solution. A further chlorination of 2-chloro-3-hydroxybenzaldehyde yields 2 : 6-dichlor-3-hydroxybenzaldehyde. The nitro derivatives can be obtained by direct nitration. Several examples of the production of these compounds are given.

(*Continued on page* 377)

(*Continued from page* 376)

258,099. Oxidation of Fats, Oils, Waxes, Resins, and Like Materials. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on Rhine, Germany. Application date, October 16, 1925.

A heated gas containing oxygen is blown through a mixture of the material to be oxidised with inert bodies such as rings or balls of clay, glass, earthenware, or metal, or metal turnings, particularly aluminium. These inert materials extend above the surface of the oil to be oxidised, and the gas is then blown in through nozzles so that a froth is produced which immerses the whole of the inert substance. The products are light coloured wax-like substances which can be employed in the manufacture of polishes, leather finishes, etc.

258,144. Phosphatic Fertilisers, Manufacture of. O. R. Olsen, Tordenskjoldsgate 6b, Oslo, and E. Torkildsen, Akersgaten 63, Oslo, Norway. Application date, January 11, 1926.

A phosphate fertiliser is produced by rapidly heating a mixture of phosphate-containing materials with 25 per cent. or more of alkaline earth carbonate, with or without an oxide of iron, such as hæmatite or magnetic iron ore-concentrate free from sulphur. The heating is effected in an oxidising atmosphere to a temperature of 1,000°–1,600° C. The rapid heating is important to avoid the formation of free calcium oxide. An example is given of the production of a fertiliser containing 77 per cent. of citric acid-soluble phosphoric acid.

258,203. Symmetrical Diaryl-Guanidines, Process for the Production of. Silesia Verein Chemischer Fabriken, Idaund Marienhütte, near Saarau, Germany. International Convention date, September 23, 1925.

These products are obtained in quantitative yield and free from impurities by treating a suspension of the corresponding diaryl-thiourea in benzene, xylene, toluol, or other organic solvent with ammonia under pressure. Desulphurisation is effected at ordinary temperature in the presence of metallic oxides.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—235,588 (M. Buchner), relating to production of hydroxides and carbonates, see Vol. XIII, p. 176; 242,590 (Chemische Fabrik Dr. H. Stoltzenberg), relating to manufacture of tartrates, see Vol. XIV, p. 58; 244,736 (A. Schmalenbach), relating to separation of low boiling constituents from a mixture by vacuum distillation, see Vol. XIV, p. 211; 244,739 (A. Pongratz and A. Zinke), relating to quantitative halogenation of perylene, see Vol. XIV, p. 211; 249,801 (Simplex Refining Co.), relating to production of distillation oils, see Vol. XIV, p. 551; 252,308 (H. Wolf), relating to production of low-boiling hydrocarbons from high boiling hydrocarbons, see Vol. XV, p. 117.

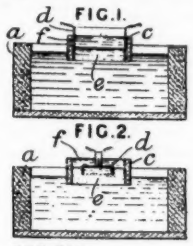
International Specifications not yet Accepted

256,587. Lactic Acid Esters. Chemische Fabrik auf Actien (vorm. E. Schering), 170, Mullerstrasse, Berlin. International Convention date, August 7, 1925.

A lactic acid salt is treated with an alcohol in the presence of an acid at a temperature considerably below the boiling point of the alcohol. The acid may be in excess, the excess acting catalytically. Calcium lactate may be treated with ethyl alcohol and excess of sulphuric acid at 40°–50° C. to obtain lactic acid ethyl ester. The methyl ester may be obtained from magnesium lactate methyl alcohol, and sulphuric acid.

256,610. Obtaining Magnesium, Calcium, and other Metals by Electrolysis. A. C. Jessup, 12, Square Desnouettes, Paris. International Convention date, August 5, 1925.

For magnesium, the electrolyte may be magnesium chloride 75 per cent., barium chloride 20 per cent., calcium fluoride 5 per cent., this being heavier than the molten metal. The metal floats as a layer *e*, which constitutes the cathode, and this is covered by a protecting layer *f* of potassium chloride and magnesium chloride in the molecular proportions of 5 : 1, or alternatively potassium and sodium chlorides in equimolecular proportions. The cathode may alternatively be an inverted vessel *d*, which is initially filled with molten metal. The deposited metal collects between the vessel *d* and an outer refractory cylinder *c*. The cathode connection



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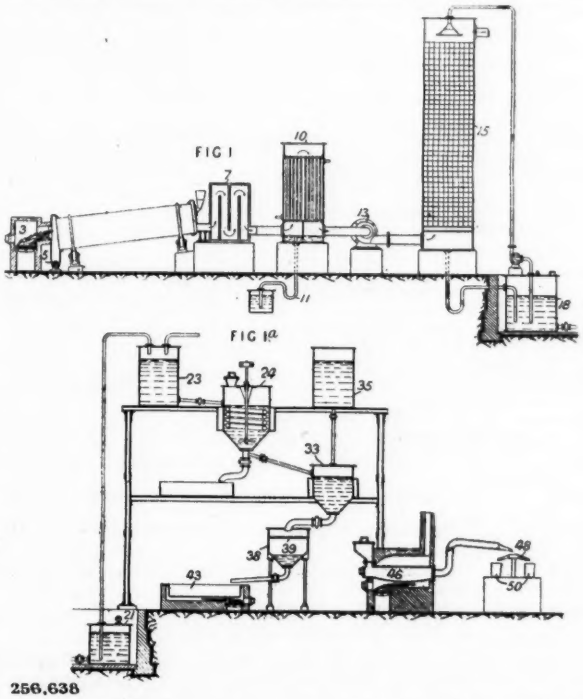
may be of iron, chromium, molybdenum, tungsten, manganese, vanadium, titanium or silicon, and it may be coated with a fusible metal not readily miscible with magnesium, such as antimony, bismuth, or tin, or with a miscible metal such as copper, zinc, or aluminium.

256,622. Cement and Phosphorus, Manufacture of. W. Kyber, 10, Liliencronstrasse, Steglitz, Berlin. International Convention date, August 4, 1925.

A slag suitable for use as aluminous cement is obtained in the manufacture of phosphorus by fusion of phosphorites with carbon, by adding aluminous material such as bauxite.

256,638. Sulphur. C. Still, Bismarckplatz, Recklinghausen, Westphalia, Germany. (Assignees of Ges. für Kohlentechnik, Eving, Dortmund, Germany.) International Convention date, August 6, 1925.

The object is to obtain pure sulphur from crude materials containing free sulphur. Iron-sulphur purifier waste is mixed with crude pyrites separated in the preliminary washing of coal in by-product coking processes, and the mixture is burned in a rotary retort 1 heated by a furnace 3. The iron oxide



256,638

is discharged through an outlet 5 and used as purifying material for coal gas. The gas passes through a dust separator 7 to a cooler 10, where water is condensed and passes out at 11 as a mixture of dilute sulphuric and sulphurous acid. The gas then passes to a packed tower 15 supplied with aqueous ammonia which combines with the sulphur dioxide forming ammonium sulphite solution which passes to the tanks 18, 21 and is then raised to a tank 23. The solution is then treated

with ammonia in excess, and passes to a vessel 24 containing a further quantity of the raw material containing sulphur, so that ammonium thiosulphite is obtained by solution of the sulphur. The vessel 24 may be provided with heating coils. The solution passes to a steam-jacketed vessel 33 and sulphuric acid is added from tank 35. This acid may be the condensate from tank 11. Sulphur is precipitated, and the liquid is passed through a filter 38. The ammonium sulphate is crystallised in a pan 43, and the sulphur is distilled in a retort 46.

LATEST NOTIFICATIONS.

259,201. Process for the regeneration of catalysts used in the production of phosphorus pentoxide or phosphoric acid by the interaction of phosphorus and water vapour. I. G. Farbenindustrie Akt.-Ges. September 29, 1925.

259,204. Manufacture and production of esters. I. G. Farbenindustrie Akt.-Ges. October 5, 1925.

259,230. Synthetic production of ammonia. Uhde, F. October 2, 1925.

259,245. Manufacture of crystallised arsenobenzenes. Albert, Dr. A. October 3, 1925.

Specifications Accepted with Date of Application

242,659. Active carbon, Process of and apparatus for manufacturing. Naamlooze Vennootschap Algemeene Norit Maatschappij. November 8, 1924.

246,476. New derivatives of cellulose, Manufacture of. S. A. Ogden. January 20, 1925.

258,626. Dyes, Preparation of. Scottish Dyes, Ltd., J. Thomas, J. E. G. Harris, and B. Wylam. March 17, 1925.

258,641. Bismuth for therapeutic purposes, Manufacture of organic compounds of. R. W. E. Stickings, and May and Baker, Ltd. June 19, 1925.

258,648. Concentration of metalliferous ores. Minerals Separation, Ltd., and J. C. Moulden. June 22, 1925.

258,656. Conversion of heavy hydrocarbon oils into light hydrocarbon oils or spirits. F. Lamplough and Ratoczyn Extended Oilfields, Ltd. June 23, 1925.

258,660. Treating residue resulting from the manufacture of acetylene gas from calcium carbide and water for the recovery of lime products, Method of. A. Stephenson and Allen-Liversedge, Ltd. June 24, 1925.

258,661. Lime, Manufacture of. A. Stephenson and Allen-Liversedge, Ltd. June 24, 1925.

258,724. Electrodeposition of chromium, Process for. C. L. Long, D. J. Macnaughton, and G. E. Gardam. September 4, 1925.

258,744. Organic phosphorus compounds, Manufacture of. A. J. Ransford. (*L. Cassella and Co. Ges.*) October 20, 1925.

258,786. De-acidification of oils and fats. H. Bollmann. March 3, 1926.

258,821. Alkali hypochlorite and alkali chloride, Process for the manufacture of solid mixtures of. A. Oppe. April 17, 1926.

Applications for Patents

British Celanese, Ltd., Dreyfus, H., and Haney, C. I. Cellulose materials, and products obtained therefrom. 25,043. October 8.

British Dyestuffs Corporation, Ltd., Shepherdson, A., and Thornley, S. Manufacture of vat dyes. 25,106. October 8.

Carpmael, W. (I. G. Farbenindustrie Akt.-Ges.). Activation of carbon. 24,699. October 5.

Carpmael, W. (I. G. Farbenindustrie Akt.-Ges.). Fixing dyestuffs. 24,961. October 7.

Coley, H. E. Manufacture of zinc. 24,910, 24,911, 24,920. October 7.

Coley, H. E. Manufacture of thorium, cerium, etc. 24,912. October 7.

Coley, H. E. Processes for the extraction of gold from arsenical ores. 24,913. October 7.

Coley, H. E. Manufacture of barium sulphide. 24,914. October 7.

Coley, H. E. Reduction of carbonates, etc. 24,915. October 7.

Coley, H. E. Reduction of sulphates. 24,916. October 7.

Coley, H. E. Manufacture of photographic plates and films. 24,917. October 7.

Coley, H. E. Manufacture of alloys. 24,918. October 7.

Coley, H. E. Apparatus for manufacture of gas. 24,919. October 7.

Coley, H. E. Manufacture of cyanides from nitrogen. 24,921. October 7.

Coley, H. E. Manufacture of metallic nitrides and ammonia from nitrogen. 24,922. October 7.

Dreyfus, H. Treatment of cellulose derivatives. 25,012. October 8.

Eilersen Aktieselskabet Chemical Works, R., Hallasmoller, E., and Winkel, C. Process of concentrating vitamines. 24,558. October 4.

Falco, F. Manufacture of barium carbonate. 24,609. October 5.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Means for measuring liquid levels. 24,583. October 4.

I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of artificial resins. 24,584. October 4.

I. G. Farbenindustrie Akt.-Ges. Activation of carbon. 24,699. October 5.

I. G. Farbenindustrie Akt.-Ges. Manufacture of condensation products. 24,821. October 6. (Germany, October 16, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of wetting and emulsifying preparations. 24,926. October 7. (Germany, November 19, 1925.)

I. G. Farbenindustrie Akt.-Ges. Treating liquids containing tasty and aromatic substances. 24,987. October 7. (Germany, October 12, 1925.)

I. G. Farbenindustrie Akt.-Ges. Treatment of crude carbon bisulphide. 25,053. October 8. (Germany, October 24, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of benzanthrone derivatives. 25,178. October 9. (Germany, October 10, 1925.)

International Nickel Co. and Wade, H. Manufacture of alloys. 24,591. October 4.

Kurz-Kasch Co. Method of moulding phenolic condensation products. 24,580. October 4. (United States, October 5, 1925.)

Vautin, C. T. J. Manufacture of tin-containing alkyl iodides. 25,181. October 9.

Webb, H. Electrodeposition of metals. 24,143. October 9.

Swedish Trade Developments

ACCORDING to the Swedish Economic Review for the third quarter of 1926, the economic position in Sweden during the quarter under review has undergone small change and continues to develop satisfactorily. A survey of the conditions prevailing during something more than the half of the current year proves that the economic position has developed in a favourable direction. The principal export industries have maintained their position, and an indication of the greater confidence in the industries is afforded by the fact that quotations for the more important industrial securities have steadily risen for some months past. No essential change is noted in the unemployment figures, and the country has experienced no labour troubles of importance during the present year. On the other hand, the coal strike in this country and the violent fluctuations of the French and Belgian currencies have to a certain extent adversely affected the foreign trade.

The timber market has been firm and sellers have been able to maintain their prices well. In the middle of August 500,000 standards out of a total export production of 800,000 standards were sold. The export of pulp and paper has increased. By far the greater part of this year's production of wood pulp has been sold long ago, and the same holds good as far as a considerable portion of next year's production is concerned. The export of machinery has also developed in a favourable direction. The position in the iron and steel industry, on the other hand, is still very depressed in spite of a certain number of orders for special qualities having gone to Sweden on account of the stoppage in this country.

Power Methane Gas from Sewage

THE Birmingham Tame and Rea District Drainage Board are now installing a sludge-gas power plant in order to utilise the methane gas produced from the sludge digestion tanks at the Saltley Works. The estimated outlay for gasholder covers, gas engine and generator, and the necessary foundation work, is £12,515, and it is confidently anticipated that the plant will be capable of producing 500,000 units of electricity per annum—this amount of electric current being required to replace the supply hitherto derived from the steam provided by the Birmingham Corporation Destructor at Nechells. Mr. Whitehead, the chief engineer of the Board, estimates that by this utilisation of the gas emanating from sludge, the cost in electric current will be reduced by over £1,000 per annum. This development is of considerable interest to engineers and chemists, and is the outcome of working experiments on a much smaller scale made by Mr. John D. Watson (formerly engineer to the Board) at the Cole Hall Disposal Works. In an official report, it is stated that experiments with that plant held "great possibilities of further expansion." The power plant will be in operation in the near future.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 6os. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4⅞d. to 5¾d. per lb. Crude 60's, 1s. 4d. to 1s. 5d.

ACID CRESYLIC 99/100.—2s. 6d. per gall. 97/99.—2s. to 2s. 9d. per gall. Pale, 95%, 1s. 10d. to 2s. 6d. per gall. Dark, 1s. 9d. to 2s. 4d. per gall. Steady.

ANTHRACENE.—A quality, 2½d. to 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. per gall., ex works in tank wagons.

TOLUOL.—90%, 2s. to 3s. 3d. per gall. Pure, 2s. 3d. to 3s. 6d. per gall.

XYLOL.—2s. 3d. to 3s. per gall. Pure, 4s. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. per gall. Standard specification, 6⅜d. to 9d. middle oil, 7d. to 7½d. per gall. Heavy, 8⅜d. to 9d. per gall.

NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 3d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £4 10s. to £8 per ton. Whizzed or hot pressed, £5 10s. to £8 10s.

NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Flaked, £12 10s. to £13, according to districts.

PITCH.—Medium soft, 147s. 6d. to 155s. per ton, according to district.

PYRIDINE.—90/140, 16s. to 18s. 6d. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. 6d. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—9½d. per lb. naked at works.

ANILINE SALTS.—9½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID—1s. 8½d. per lb.

o-CRESOL 29/31° C.—3½d. to 3¾d. per lb.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—7d. per lb. naked at works.

NITRONAPHTHALENE.—10d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—9d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£7 to £9 per ton, according to grade and locality.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall, 40% O.P.

WOOD TAR.—£3 to £5 per ton, according to grade.

BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. to 1s. 4½d. per lb.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P.—1s. 3d. to 1s. 5d. per lb. Technical.—10½d. to 11d. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—9s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ASPIRIN.—2s. 4d. to 2s. 5d. per lb.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—8s. 9d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 9d. to 1s. 10d. per lb.; sodium, 2s. to 2s. 1d. per lb.; ammonium, 2s. 3d. to 2s. 4d. per lb., all spot.

CALCIUM LACTATE.—1s. 3½d. to 1s. 4½d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. to 7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 19s. 6d. net per lb.,; Synthetic, 11s. 6d. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb. Detached Cryst., 15s. 9d. per lb.

MERCURIALS.—Red oxide, 5s. 9d. to 6s. 4d. per lb.; Corrosive sublimate, 4s. to 4s. 8d. per lb.; white precipitate, 4s. 10d. to 5s. 2d. per lb.; Calomel, 5s. to 5s. 2d. per lb.; Yellow Oxide, 5s. 7d. to 5s. 8d. per lb.

METHYL SALICYLATE.—1s. 6d. per lb.

METHYL SULPHONAL.—15s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENAZONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. in 100 oz. tins.

RESORCIN.—4s. 3d. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. B.P.C., 1923—2s. to 2s. 1d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 11d. to 2s. per lb.

THYMOL.—12s. to 13s. 9d. per lb., according to quantity.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 6d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 6d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. per lb.

COUMARIN.—11s. 6d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 3d. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 10d. per lb.

ISO EUGENOL.—14s. per lb.

LINALOL.—Ex Shui Oil, 12s. Ex Bois de Rose, 17s. per lb.

LINALYL ACETATE.—Ex Shui Oil, 15s. Ex Bois de Rose, 18s. 6d. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—30s. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—18s. 6d. to 20s. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 6d. per lb.

BERGAMOT OIL.—33s. per lb.

BOURBON GERANIUM OIL.—12s. per lb.

CAMPHOR OIL.—67s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—5½d. per oz.

CASSIA OIL, 80/85%.—9s. 3d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 6d. Ceylon, pure, 2s. 1d. per l

CLOVE OIL.—6s. 9d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 18s. 6d. per lb.

LEMON OIL.—10s. 6d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 3d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 35s. per lb. Japanese, 11s. 9d. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, October 14, 1926.

THERE has been a slight expansion in the demand for chemical products during the week under review although the majority of the orders are still for relatively small quantities. A more hopeful feeling, however, is developing, and it is anticipated that there will be an immediate increase in the demand as soon as some definite signs of a settlement of the coal strike are reported. The outlook in the textile areas also is more favourable than it has been for some time past. Prices continue very firm and stocks are generally light. A good deal of uncertainty continues to exist in respect of the Key Industries Duty, and the delay in the publication of the lists is causing a great deal of inconvenience to traders and consumers alike. Export trade is only moderate and without special feature.

General Chemicals

ACETONE continues quiet with a poor demand and price quite nominal.

ACID ACETIC is in good demand and price is unchanged at £37 for technical 80% and usual extras for other grades.

ACID FORMIC is very active and price is very firm at 52s. per cwt. for spot.

ACID LACTIC is more active but the price is extremely firm at £43 per ton for 50%, by weight.

ACID OXALIC is in somewhat better demand, but trade still leaves a good deal to be desired; price is unchanged at 3⅝d. per lb.

ALUMINA SULPHATE continues in fair request on export account, but only a moderate amount of business is passing for home trade, and price is nominally unchanged at £5 10s. for 17/18%.

AMMONIUM CHLORIDE continues quiet at £18 to £18 10s. per ton for fair quantities.

BARIUM CHLORIDE is inclined to be easier and is quoted at £9 10s. per ton.

COPPER SULPHATE has been in request, but in view of the combine of the metal producers, makers are disinclined to quote far forward at the moment; the price is unchanged.

EPSOM SALTS continues firm and in good demand at £5 10s. per ton.

FORMALDEHYDE is steady at £40 to £41 per ton, but demand is poor.

LEAD ACETATE is steady, and the price is quoted at £45 per ton for white and £43 per ton for brown.

METHYL ACETONE is firm and advancing in price from £55 to £56 per ton.

METHYL ALCOHOL.—Stagnant, and the nominal quotation is £48 per ton.

POTASSIUM CHLORATE.—Firm and scarce at 3½d. per lb.

POTASSIUM PERMANGANATE.—Only a small demand is reported, but price is unchanged at 7¼d. to 7½d. per lb. for B.P.

POTASSIUM PRUSSIATE has been somewhat more active and is quoted for fair quantities at 6¾d. to 7d. per lb., the tendency is firmer.

SODIUM ACETATE is in good request and is offered at £19 10s. to £19 15s. per ton.

SODIUM BICHROMATE is very active, and British makers' prices are unchanged.

SODIUM NITRITE.—Demand continues small, but the price is firm at £20 10s. per ton.

SODIUM PHOSPHATE is firm and the market is unchanged at £14 per ton.

SODIUM PRUSSIATE is very firm at 3⅞d. per lb., and a better turnover is reported.

SODIUM SULPHIDE is nominally unchanged, but British manufacturers are finding difficulty in meeting their orders owing to lack of fuel.

ZINC SULPHATE is firm at £14 per ton.

Coal Tar Products

Supplies of coal tar products are becoming increasingly difficult to obtain.

90's BENZOL is being quoted at 2s. 2d. per gallon on rails, while the motor quality is quoted at 2s. 1d. per gallon on rails.

PURE BENZOL is practically unobtainable of British manufacture, and is worth about 4s. to 4s. 2d. per gallon.

CREOSOTE OIL is worth about 8¾d. per gallon on rails at works in the country, while the price in London is 9¼d. to 9½d. per gallon at works.

CRESYLIC ACID.—The pale quality 97/99% is worth about 2s. 2d. per gallon on rails, and the dark quality 95/97% is quoted at 2s. 1d. per gallon on rails.

SOLVENT NAPHTHA is quoted at 1s. 10d. per gallon on rails, in very small quantities.

HEAVY NAPHTHA is in very short supply, and is worth about 1s. 6d. per gallon on rails.

NAPHTHALENES are very scarce, the 76/78 quality being worth about £8 per ton on rails, and the 74/76 quality £7 10s. to £7 15s. per ton at makers' works.

PITCH.—Notwithstanding the prohibition of export, pitch remains scarce and prices still appear to be soaring.

Latest Oil Prices

LONDON.—LINSEED OIL, steady, spot, £30 5s., ex mill; October, £29 2s. 6d.; November-December, £29 5s.; January-April, £29 17s. 6d.; May-August, £30 2s. 6d. RAPE OIL quiet. Crude extracted, £46; technical refined, £48. TURPENTINE in quiet request at 6d. to 1s. per cwt. decline. American, spot, 63s. 6d.; November-December, 64s. 3d.; January-April, 65s. 6d.; and May-June, 65s. 6d.

HULL.—LINSEED OIL.—Naked, spot, £30 2s. 6d.; October, £29 2s. 6d.; November-December, £30 2s. 6d.; January-April, £30 5s.; May-August, £30 7s. 6d. COTTON OIL.—Naked Bombay crude, £31 10s.; Egyptian crude, £31 15s.; edible refined, £36; technical, £35 10s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £40.—GROUNDNUT OIL.—Crushed-extracted, £43; deodorised, £47. SOYA OIL.—Extracted and crushed, £35; deodorised, £38 10s. RAPE OIL.—Crude-extracted, £45; refined, £47 per ton, net, cash terms, ex mill. CASTOR OIL and COD OIL.—Unchanged.

Nitrogen Products

Export.—British producers have continued to sell the small quantities of sulphate of ammonia available at the ports on the basis of £11 to £11 2s. 6d. per ton f.o.b. Autumn has brought its usual little liveliness. Increased interest has been noted in several countries. This is due to the first inquiries from early consumers. The demand on the Continent has been quite satisfactory recently. The Belgian and French home prices now stand above the British, but this is partly due to appreciation of the exchanges.

Home.—Home demand continues to be quiet, though merchants are still making bookings for spring delivery. This is due to the uncertainty created by the continuance of the coal stoppage. However, it is still hoped that the mines will be in full blast early in the New Year, and that production of sulphate will almost return to its normal figure. There was a report in the market during the week that home prices were to be raised, but no confirmation has been forthcoming.

Nitrate of Soda.—Nitrate has had its busiest week of the season. Whether this long-looked-for activity will continue or not remains to be seen. All the indications point to a heavily reduced consumption this season.

Calcium Cyanamide

INTEREST in this fertiliser for autumn application to winter corn crops and grassland continues to be well maintained. The price to farmers for October delivery is £9 6s. per ton for four-ton lots carriage paid to any railway station in Great Britain.

The International Union

THE International Union of Pure and Applied Chemistry, meeting recently in Washington, D.C., adopted plans to aid research chemists in obtaining compensation for their discoveries. The committee to which was referred the urgent need for pure products for chemical research work decided to proceed along the lines of the inquiry begun by the Committee on Guaranteed Reagents of the American Chemical Society. The committee on biological chemistry recommended that all proteids be divided into two groups, the first to contain all amino acids and the second all other proteids. A decision will be reached at the next conference as to whether the second group shall be called proteins, proteids, protecides, or peptides. The next meeting of the association will be held in Poland.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, October 13, 1926.

SINCE our last report there has been practically no change in the condition of the heavy chemical market, and until the coal strike is settled there is not much prospect of business of any importance being put through. There is no change of any importance to note in prices.

Industrial Chemicals

ACID ACETIC.—98/100%, £55 to £67 per ton, according to quality and packing, c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC ICE CRYSTALS.—In rather better demand but quoted price unchanged at 5½d. per lb. delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—Unchanged at 1s. 3d. per lb., less 5%, ex store. Offered for early shipment at 1s. 2⅞d. per lb., less 5 per cent. ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80°.—Usual steady demand and price unchanged at £23 5s. per ton ex station, full truck loads.

ACID OXALIC 98/100%.—Spot material quoted 3⅞d. per lb., ex store. Offered for early shipment from the Continent at 3¾d. per lb. ex wharf.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168° £7 per ton ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC B.P. CRYSTALS.—Unchanged at 11¾d. per lb., less 5% ex store. Offered for prompt shipment at 11½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE 17/18% IRON FREE.—Spot material on offer at about £6 per ton ex store. Quoted £5 8s. 6d. per ton c.i.f. U.K. ports, prompt shipment from the Continent.

ALUM LUMP POTASH.—On offer from the Continent at £7 15s. per ton c,i.f. U.K. ports. Spot material quoted £9 per ton ex store. Crystal powder £8 5s. per ton ex store or £7 12s. per ton c.i.f. U.K. port.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb. ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton; powdered £39 per ton, packed in 5 cwt. casks delivered or f.o.b. U.K. ports.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers crystals of British manufacture quote £23 10s. to £25 10s. per ton ex station. Continental on offer at about £21 10s. per ton c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 5s. per ton c.i.f. U.K. ports.

ARSENIC WHITE POWDERED.—Spot material quoted £18 per ton ex store. On offer from mines for prompt despatch at £17 10s. per ton ex wharf.

BARIUM CARBONATE 98/100%.—White powdered quality quoted £6 15s. per ton c.i.f. U.K. ports.

BARIUM CHLORIDE 98/100%.—Quoted £9 12s. 6d. per ton ex store, spot delivery. On offer from the Continent at about £8 17s. 6d. per ton c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton ex works. Continental quoted £5 per ton c.i.f. U.K. ports.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton ex station. Contracts 20s. per ton less. Continental now quoted £7 15s. per ton c.i.f. U.K. ports.

BORAX.—Granulated £22 10s. per ton: crystals, £23 per ton; powdered, £24 per ton carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton ex station. Continental on offer at £3 12s. 6d. per ton c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton f.o.r. works, or at £4 2s. 6d. per ton f.o.b. U.K. port, for export.

COPPER SULPHATE.—Continental material on offer at about £22 per ton ex wharf. Moderate inquiry for export and price of English material about £23 5s. per ton f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Spot material on offer at £40 per ton ex store. Quoted £38 per ton c.i.f. U.K. ports, prompt shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton ex store or station. Continental quoted £2 15s. per ton c.i.f. U.K. ports.

LEAD, RED.—Now on offer at £37 10s. per ton ex store.

LEAD, WHITE.—Quoted £38 per ton ex store.

LEAD ACETATE.—White crystals quoted £44 10s. per ton c.i.f. U.K. ports, prompt shipment; brown about £40 5s. per ton c.i.f. U.K. ports.

MAGNESITE GROUND CALCINED.—Quoted £8 10s. per ton ex store in moderate demand.

POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton c.i.f. U.K. ports according to quantity and destination. Spot material available at about £29 per ton.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.

POTASSIUM CARBONATE.—96/98% quoted £25 5s. per ton ex wharf, early delivery. Spot material on offer at £26 10s. per ton ex store. 90/94% quality quoted £22 5s. per ton c.i.f. U.K. ports.

POTASSIUM CHLORATE 98/100%.—Powdered quality on offer from the Continent at about £25 10s. per ton c.i.f. U.K. ports; crystals £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—Spot material quoted £24 per ton ex store. On offer from the Continent at about £21 15s. per ton c.i.f. U.K. ports.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—On offer at 7d. per lb. ex store, spot delivery. Quoted 6¾d. per lb. ex wharf, early shipment.

POTASSIUM PRUSSIATE YELLOW.—In little demand. Now on offer at about 6¾d. per lb. ex store. Offered for prompt shipment from the Continent at fraction less.

SODIUM ACETATE.—English material on offer at £22 per ton ex station. Continental quoted £18 15s. per ton c.i.f. U.K. ports.

SODA CAUSTIC.—76/77%, at £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken 60%, £16 12s. 6d. per ton; powdered 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more. Alkali, 59%, £8 12s. 3d. per ton ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted at £9 per ton, ex station, minimum 4 ton lots. Pea crystals, £14 10s. per ton, ex store, spot delivery.

SODIUM NITRITE 100%.—Quoted £20 17s. 6d. per ton, ex store, spot delivery.

SODIUM PRUSSIATE (YELLOW).—Spot material now on offer at 4d. per lb., ex store. Quoted 3¾d. per lb. c.i.f. U.K. ports, prompt shipment.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export, and higher prices obtainable.

SODIUM SULPHIDE.—60/62% solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K. Minimum 5 ton lots with slight reduction for contracts. 60/62% solid quality offered from the Continent at about £8 15s. per ton c.i.f. U.K. ports; broken quality 15s. per ton more; crystals, 30/32%, about £6 10s. per ton c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American, £9 per ton—ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports. 98/100%, solid, on offer from the Continent at about £21 15s. per ton c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

BETA NAPHTHOL.—11d. to 1s. per lb.; some inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb.; some home inquiries.

BETA NAPHTHYLAMINE.—3s. per lb.; some home inquiries.

J. ACID.—5s. per lb.; some home inquiries.

German Potash Difficulties

ACCORDING to the report of the Salzdetfurth Konzern, business in German potash was unsatisfactory during the first four months of 1926, owing principally to the reduced domestic demand. German agriculture is in an unfavourable situation financially and farmers are using less potash for fertilising purposes. Efforts made to assist farmers in purchasing potash by granting them credit against notes discounted by the Reichsbank have not proved successful, since these notes fall due in November, before the farmers realise on their crops.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, October 14, 1926.

From the point of view of actual demand the Manchester chemical market has shown little improvement compared with a week ago. The home demand is limited as a result of the general industrial conditions, although, as reported last week, export inquiry is widening out somewhat. The market has taken on a more hopeful appearance during the last day or two, due largely, no doubt, to the fact that there has been a big change for the better in the Lancashire coalfield since the beginning of this week. As before, prices in pretty well every section of the market continue steady, with perhaps fewer items showing any indication of easiness.

Heavy Chemicals

There is still only a limited demand for sulphide of sodium, 60-65 per cent. concentrated being quoted at about £10 per ton and commercial quality at £7 15s. to £8. Bicarbonate of soda continues to be offered at £10 10s. per ton, with sales of this rather quiet. Alkali, 58 per cent. quality, is steady and meets with a quiet demand at £6 15s. per ton. Prussiate of soda is in fair request and quotations are maintained at round 3¾d. per lb. Phosphate of soda is still rather slow with current prices at £12 5s. to £12 10s. per ton. Inquiry for caustic soda remains on a fairly satisfactory scale, and values are fully held at from £15 2s. 6d. per ton for 60 per cent. material to £17 10s. for 76 per cent. The position of bichromate of soda has not changed and about 3¼d. per lb. is still the basis of current quotations. Saltcake meets with a quiet demand at £3 5s. per ton. Glauber salts are being offered at about £3 15s. per ton without attracting much buying interest. Bleaching powder is unchanged at £8 10s. per ton, but sales of this remain only moderate. For hyposulphite of soda the demand keeps quiet, with photographic material quoted at about £15 5s. per ton and commercial crystals at £9 10s. Nitrite of soda is in moderate request at round £19 5s. per ton. Chlorate of soda is on offer at 3½d. to 3¼d. per lb., with the demand rather slow.

Carbonate of potash keeps steady at about £26 per ton, although business in this material is only of limited extent. Caustic potash meets with a moderate demand with current offers at round £27 5s. per ton. Bichromate of potash is now little better than 4d. per lb., and inquiry for this is slow. For yellow prussiate of potash prices keep steady at about 6⅞d. per lb. and rather more buying interest has been shown. Permanganate of potash is attracting a very limited amount of attention, but values show little alteration, B.P. quality still being quoted at about 6¾d. per lb. and commercial crystals at 5d. to 5¼d. There is not much business passing in chlorate of potash, which is on offer at 3½d. to 3⅝d. per lb.

Arsenic is much firmer again after its advance last week, and about £15 10s. per ton is now being asked at the mines for white powdered, Cornish makes, with supplies on the short side. Sulphate of copper is in moderate demand on export account with prices steady at round £23 per ton, f.o.b. Nitrate of lead is in fair request and values are maintained at £40 to £41 per ton. Acetate of lead is also pretty well up to recent values, white offering at £45 10s. per ton and brown at £41. Acetate of lime keeps firm at £17 10s. per ton for grey and about £8 per ton for brown.

Acids and Tar Products

There is not much business stirring in the case of oxalic acid, but prices are somewhat steadier at about 3⅝d. per lb. Tartaric acid also is selling in limited quantities at 11½d. to 11¾d. per lb. Citric acid remains quiet but steady at about 1s. 3¼d. per lb. So far as acetic acid is concerned the demand for this material is moderate and prices show little change compared with last week, glacial still being quoted at £65 to £66 per ton and 80 per cent. commercial at round £37 per ton.

The scarcity of coal-tar products continues, although some continental materials are relieving the situation to some extent. In view of the export prohibition pitch is largely nominal for shipment. Solvent naphtha is well held at up to 1s. 11d. per gallon, whilst crystal carbolic acid is firm at about 5½d. per lb. Creosote oil is very scarce indeed and round 8¾d. per gallon is now being quoted.

Nitric Acid Production in Sweden

(From a Correspondent.)

It is announced from Gothenburg that the Superfosfat Aktiebolag of Stockholm has made application to the Government to place before the Riksdag a proposal for granting a State loan of 10,000,000 kr., or to afford the company an opportunity of borrowing that amount, for the establishment of a works for the production of nitric acid and nitrates. It is suggested that the period for the redemption of the loan should be 25 years with interest of 6 per cent. in the first ten years, after which the rate should be increased by an amount fixed by the Government. In the course of the application the company points out that the method of manufacturing nitric acid from Chilean nitrate is too costly, as the acid can be produced cheaper from atmospheric nitrogen. Such works have now been established in most countries, and a general endeavour exists everywhere to arrange such manufacture, in order to get the raw material for the production of explosives. At present it is necessary for Sweden to purchase her needs of nitric acid from Norway and Germany, although such purchases can only take place during times of peace.

The company states that it has acquired the Fauser method for the production of nitric acid from atmospheric nitrogen, so that, provided the capital for the construction of the works becomes available, it will be possible to start this industry, which is so important for the defence of the country. The Fauser method is stated to have been used in Italy for some years past with success, and has been studied on the spot by some of the company's engineers. It is proposed to establish the works at Trollhattan, where the company already has installations for the production of carbide and chlorates and where a large supply of electric power is available in the event of need, such as on mobilisation. A general condition is that the power is offered by the State hydro-electric works at Trollhattan at a reasonable price.

The establishment of the works would involve, it is estimated, an expenditure of 3,000,000 kr., with a further 500,000 kr. for the erection of a reserve set for the concentration of nitric acid. A production of 1,500 tons of concentrated acid per annum is selected for the peace requirements of the country. Beyond that, the works would turn out 3,000 tons of ammonium nitrate, of which the country would consume about 1,500 tons for explosive purposes, while the balance could with advantage be used for fertilisation or be exported. For the rest, the capacity of the works has been adapted according to units suitable for manufacturing and the possibility of rearranging the production, so that, with the proposed reserve in concentration plant, it would be possible to produce 6,000 tons of nitric acid per annum.

Colas Products

In view of the great interest that is being shown in emulsified bitumen, and of the fact that the use of cold bitumen has become standard practice both here and abroad, a booklet entitled *Colas Roads* has been issued by Colas Products, Ltd., of 38-39, Parliament Street, London, S.W.1. "Colas" is described as an emulsion of pure bitumen; and by means of the "Colas" process it is claimed that it is possible to emulsify any grade of bitumen which may be required for any specific purpose. As regards the making and maintenance of roads, the main uses to which "Colas" is put are: grouting by either full grout or semi-grout methods; surface dressing; reconditioning; and patching. *Colas Roads* gives a complete account of the method used, together with an analysis of costs and some useful tables.

Sir Alfred Mond on Pessimistic Speeches

Sir Alfred Mond, discussing the impressions he received in the United States and Canada in the course of a trip from which he has just returned, strongly deprecated the depressing tone of the statements about the position of Great Britain which were made by some of our publicists. These statements were creating in the United States the impression that this country was doomed. This made it very difficult indeed for industrialists who had to deal with Americans to carry on their negotiations in a proper spirit, and was doing a very great deal of harm, especially as it contrasted strongly with the buoyant and prosperous industrial tone of the United States.

Company News

ROPP TIN CO.—A second interim dividend of 20 per cent., less tax, on account of the year 1926, is payable on November 6.

BROKEN HILL PROPRIETARY CO., LTD.—The half-yearly dividend of 1s. per share has been declared payable on November 10.

ALIANZA NITRATE CO.—In view of the present situation the board at Valparaiso have decided not to declare an interim dividend corresponding to the year 1926.

BABCOCK AND WILCOX, LTD.—An interim dividend of 5 per cent., tax free, is announced on the ordinary shares, on account of the year 1926, payable on October 28.

AGUAS BLANCAS NITRATE CO., LTD.—The directors regret that until conditions in the nitrate industry materially improve it will be impossible to resume the payment of dividends.

CANADIAN EXPLOSIVES, LTD.—A dividend of 1¾ per cent. has been declared for the quarter ended September 30 last, on the 7 per cent. cumulative preferred shares, payable on October 15.

BRYANT AND MAY, LTD.—An interim dividend of 4 per cent., free of tax, on the increased ordinary capital and the partnership shares for the half-year ended September 30, is payable on November 1.

LAWES' CHEMICAL MANURE CO.—For the year ended June 30 last, the report states the balance of profit and loss account, together with the balance brought forward, amounts to £3,342, which the directors propose shall be carried forward. The annual meeting will be held at the Great Eastern Hotel, London, on October 21, at noon.

RIO TINTO CO.—Out of the estimated profits of the year 1926 the directors have declared an interim dividend of 20s. per share on the ordinary shares, which compares with 15s. per share at this time last year. The usual interim dividend for the six months ended June 30 last of 2s. 6d. per share has also been declared on the 5 per cent. preference shares. Both dividends are payable on and after November 1, less tax.

TRINIDAD CENTRAL OILFIELDS, LTD.—The chairman, Mr. Alexander Duckham, in moving the adoption of the report and accounts at the annual meeting, in London, on Monday, said that, in spite of the smaller production, the debit balance carried from the trading to the profit and loss account at December 31, 1925, was £7,183, as against £29,540 for the preceding year. Alexander Duckham and Co., Ltd., the company's subsidiary, had had a satisfactory year, he stated, and had declared the usual 10 per cent. dividend on its capital.

GLENBOIG UNION FIRE-CLAY CO.—The report for the year to August 31, 1926, states that the profit, including £6,417 brought forward (less directors' and auditors' fees), amounts to £28,153. The directors recommend placing to depreciation £1,500, and to Imperial taxation reserve £2,000. A dividend at the rate of 17½ per cent., less tax at 4s. in the £, is proposed, leaving £3,653 to be carried forward. The ordinary capital expenditure during the year was £1,353. A sum of £10,912 has been expended on repairs and renewals for the year, and has been paid out of revenue. The annual meeting will be held in Glasgow on October 20, at noon.

ELECTROLYTIC ZINC CO. OF AUSTRALASIA.—The report for the year ended June 30 states that after transferring £145,000 to reserve for depreciation, the gross profit was £552,973, and net profit, after taking into account profit and loss items, including £49,551 for income-tax provision, was £420,699. This, added to £165,932 brought forward, made available £586,631, which is appropriated as follows:—Debenture sinking fund reserve, £12,100; written off investigational research and general development account, £20,000; carried to equalisation reserve, £40,000; applied towards new plant, £20,000; dividends 8 and 9 (totalling 12 per cent.), £311,845; balance carried forward, £182,686. Since the close of the period dividend No. 10, absorbing £156,000, has been paid on all preference and ordinary shares.

Tariff Changes

AUSTRALIA.—The Australian Government have amended Tariff Item 1229 (c), relating to the duties on petroleum, etc.

BELGIUM.—Exemption from the Sales Tax is withdrawn in the case of sulphate of ammonia. The text of the decree may be seen at the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

GERMANY.—The attention of United Kingdom exporters is drawn to the reduction as from October 1 of the Customs duties on certain goods imported into Germany. The reduced duties on the goods in question were fixed by the Commercial Agreement between Germany and the Belgian Luxemburg Economic Union of May 4, 1925, but were not to come into force until one year after the entry into force of the Agreement. The goods affected include: oleic acid (olein) (3 Reichsmarks per 100 kg.); sulphuric acid, English and fuming (free); and lithopone (2·5 Reichsmarks per 100 kg.).

PORTUGAL.—The "Diario do Governo" for September 27 contains a Decree, No. 12,380, providing for an increase of Customs duties on artificial butter and fatty oils imported into Portugal, to come into force on September 30. Under the "Minimum" Tariff the new rate (in gold escudos per kg.) on artificial butter is 0·15 escudos; and on cotton seed, sesame, and peanut oils and any other seed oils suitable as substitutes for olive oil for food purposes, 0·1 escudos.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

FINE CHEMICALS, PHARMACEUTICAL PRODUCTS, ETC.—An agent in Vienna with good connections, desires to secure the representation of British manufacturers of the above. (Repetition of Reference N. 289.) (Reference No. 473.)

COLONIAL PRODUCTS.—A commission agent of Madrid is desirous of securing the representation of British firms exporting gums, shellac, ultramarine blue, and Colonial products generally. (Reference No. 488.)

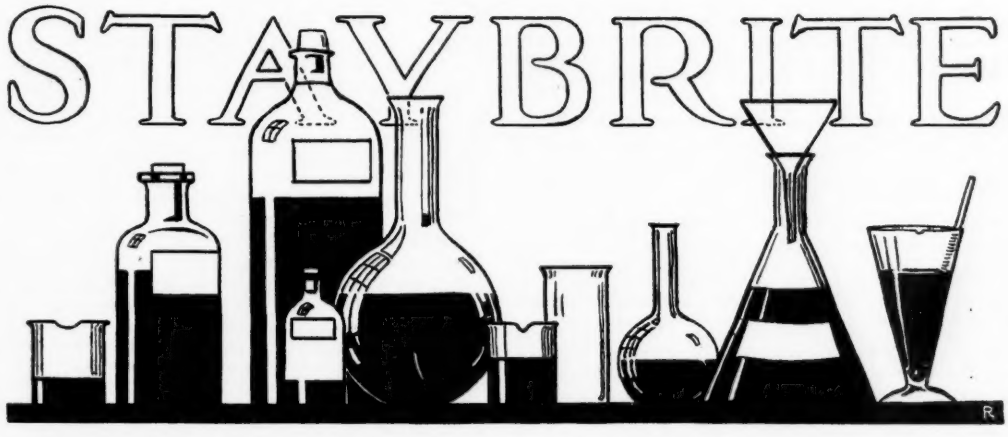
MACHINERY FOR HANDLING MINERALS, ETC.—A firm established at The Hague desires to secure the representation of British manufacturers of sieves, screens, floors, metal conveyor belts, wires, wire-tissues, wire nettings, stamped screens, drawn and rolled sections, compressed and double compressed screens, wound wedge wire slit sieves, sieving and jigging grates of section bars, perforated plates, dressing apparatus and machinery of every description. (Reference No. 484.)

Export Prohibitions Except Under Licence

THE following dangerous drugs are included in the list of goods export of which is prohibited except under licence: cocaine and salts thereof, and any substance containing not less than 0·1 per cent. of cocaine; diamorphine and salts thereof, and any substance containing not less than 0·1 per cent. of diamorphine; ecgonine and salts thereof, and any substance containing not less than 0·1 per cent. of ecgonine; heroin (see diamorphine); morphine and salts thereof, and any substance containing not less than 0·2 per cent. of morphine; and opium (raw and medicinal). The export of dangerous drugs is regulated by the Home Office, Whitehall, S.W.1. All communications respecting these drugs should be addressed to that Department. The Order prohibiting the export of pitch except under licence was published in the last issue of THE CHEMICAL AGE. It should be noted that this list supersedes those which have been issued on previous occasions.

96/3/56

FIRTH STAYBRITE



THE NEW ACID-RESISTING STEEL

The whole of the Firth experience in the application of Stainless Steels to hundreds of problems similar to yours is at your disposal for the asking. May we help you by literature or by personal technical service?

USERS and manufacturers of Chemical plant throughout the country are heartily endorsing the claims made for this remarkable new acid-resisting steel.

Here is a steel with excellent mechanical properties—steel which is completely immune from the attack of scores of the most corrosive acids (including nitric), alkalies and chemicals, and also quite unaffected by sea water and atmospheric conditions.

The chemical plant maker can readily obtain Staybrite in any of the following forms :—

BARS, RODS, PLATES, SHEETS, TUBES, STRUCTURAL SECTIONS, WIRE, FORGINGS, AND CASTINGS.

May we send you full particulars?

FIRTH "STAYBRITE" (the new super-rustless and super-malleable steel) has a yield point of about 15 tons per square inch and an elongation of 55% to 70%. This exceptional ductility is combined with maximum corrosion-resisting qualities, which it possesses to a remarkable degree. It may be cold-pressed to a degree far in advance of the so-called "Stainless Iron," and, moreover, it presents no difficulties in manipulation, since it can be welded, soldered, brazed and rivetted without trouble.

THOS. FIRTH & SONS, LIMITED, SHEFFIELD

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BOLTER, Mr. C., 3, Galen Place, Bury Street, W.C., druggists' sundriesman. £11 6s. 4d. August 18.

THREE PRICE CLEANERS, LTD., 44, Sussex Street, Middlesbrough, dyers and cleaners. £19 7s. 3d. September 8.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

CLIFFORD COVERING CO., LTD., Birmingham, celluloid manufacturers. (M., 16/10/26.) Registered October 5, £3,500 debentures; general charge. *Nil. January 30, 1926.

DOVEY VALLEY SILICA SYNDICATE, LTD., London, E.C. (M., 16/10/26.) Registered October 1, £250 and £250 debentures, part of £5,000; general charge. *Nil. December 31, 1925.

NEW ERA OILS, LTD., London, E.C. (M., 16/10/26.) Registered September 28, £500 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act 1908), present issue £250; general charge (excluding freehold property). *£400. May 25, 1926.

RHINOS, LTD. (late PEACHEY LEATHER PRODUCTS, LTD.), Slough. (M., 16/10/26.) Registered September 20, £7,000 debentures; general charge (ranking next after £20,000 debentures). *——. December 23, 1925.

SPENCER (ISAAC) AND CO. (HULL), LTD., oil manufacturers. (M., 16/10/26.) Registered September 24, £12,000 debentures to Branch Nominees, Ltd., 15, Bishopsgate, E.C.; general charge. *Nil. March 29, 1926.

WHITE SEAL SOAP CO., LTD., London, S.W. (M., 16/10/26.) Registered October 5, £1,000 debentures and £1,000 debentures to C. Burton, Hillmorten, Hendon Lane, Finchley, and Partington Advertising Co., Ltd., Temple Station, W.C.; general charge.

Satisfaction

SICALOID, LTD., London, S.W., celluloid manufacturers. (M.S., 16/10/26.) Satisfaction registered October 1, £1,150, registered August 21, 1924.

London Gazette, &c.

Companies Winding Up Voluntarily

HOLLAND (W. J.), LTD. (C.W.U.V., 16/10/26.) By Special Resolution, September 15th, confirmed October 6, H. V. Greenwood, Chartered Accountant, 12, Northgate, Bradford, appointed liquidator.

TOWER DYEING CO., LTD. (C.W.U.V., 16/10/26.) A. Chadwick, 16, Bolton Street, Bury, appointed liquidator, October 1. Meeting of creditors at the Victoria Hotel, Victoria Street, Manchester, 4 p.m. Tuesday, October 19. Creditors' claims by October 16.

Bankruptcy Information

FREEMAN, John William, chemical manufacturer, Bradshawfield Mill, Broad Street, Bolton, trading as the MENZUM CHEMICAL COMPANY. First meeting, October 20, 3.30 p.m. Official Receiver's Offices, Byrom Street, Manchester. Public examination, November 16, 10.45 a.m., Court House, Mawdsley Street, Bolton.

HADDOCK, John, manufacturing chemist, late 77, Whitehall Road, West Bromwich. (R.O., 16/10/26.) Receiving order, October 4. Debtor's petition.

Partnership Dissolved

LIGHTNING CAR POLISH CO. (Arthur HITCH, Francis Robert ATKINS and George PACEY), polish manufacturers, Bullock Street, Aston, Warwick. As from August 1, 1926, by mutual consent.

New Companies Registered

ASTRAL OILS AND DISINFECTANTS, LTD. Registered October 12. Nom. capital £2,000 in £1 shares. Importers, exporters, and manufacturers of and dealers in disinfecting preparations and materials and disinfectants of all kinds, petroleum, naphtha, and all kinds of lubricating and other oils and oleaginous substances, etc. A. Holt, 128, Tollington Park, London, N.4, is the governing director and chairman and may retain office so long as he is the largest individual ordinary shareholder.

BRITISH FERRO ENAMELS, LTD. Registered October 7. Nom. capital, £1,000 in £1 shares. Manufacturers, importers, and exporters of and dealers in ferro enamels, anti-corrosive, anti-fouling, heat and damp-resisting or other enamels, and any other compositions, liquids, and preparations for the protection, preservation, or other treatment of iron, steel, and any other metals and metalwork, etc. Directors: A. Smallwood, 13, Holyhead Road, Handsworth, Birmingham, and J. Fallon.

BRITISH GELS, LTD., Millmarsh Lane, Brimsdown, Middlesex. Registered October 6. Nom. capital, £1,000 in £1 shares. To carry on the business of oil, spirit and colourmen, chemists, druggists, drysalters, etc. Directors: H. C. Lancaster, London House, 3, New London Street, London, E.C., H. S. Tasker, and R. S. Brown.

CALDER SOAP CO., LTD., Valley Road, Liversedge, Yorks. Registered October 11. Nom. capital, £100 in £1 shares. Soap and candle makers, oil, grease and tallow merchants, tallow melters and refiners, blue makers, glycerine distillers, oil extractors and refiners, etc. Directors: J. H. Collier, Valley House, Liversedge, J. L. Collier, and C. H. Parsons.

CHEMICAL PRODUCTS, LTD. Registered in Edinburgh October 9. Nom. capital £1,000 in £1 shares. Manufacturers of foods for animals, fertilisers, insecticides, fungicides, etc. Directors: J. D. Alexander, 87, Union Street, Glasgow, and M. D. G. Macfarlane.

Discovery of Canadian Ammonium Deposits

THE discovery of a valuable deposit of ammonia salts in the Gatineau district on the Gens River, about sixty-five miles from Ottawa, has been announced by the Natural Resources Intelligence Branch of the Canadian Department of the Interior. The organic matter from which the ammonia salts will be produced has been found in large quantities over an area of 160 acres representing the four claims which have been staked. The deposit has been examined by experts of the Quebec Mines Department, who, it is stated, have declared that it is a valuable asset to the Dominion's natural resources. The ammonia product is used extensively in refrigeration and for medicinal purposes, and there is said to be only one other mine in Alberta, a property situated in Colorado.

Montreal as World Centre for Cellulose Research

THE Canadian Pulp and Paper Association, at its recent convention in Montreal, inaugurated a campaign among its members to finance a large modern building to be erected in Montreal to house the Pulp and Paper Divisions of the Forest Products Laboratory, the Cellulose Department of McGill University, and the officials of the Pulp and Paper Association. It is proposed to provide an endowment fund of $100,000 for its perpetual upkeep. Montreal is now the financial centre for the largest group of pulp producers anywhere in the world, and, with a chair of Cellulose Chemistry already established at McGill University, it is confidently believed that the chief world centre for cellulose research not only can be, but ought to be, located in Canada.